AD NUMBER

AD367479

CLASSIFICATION CHANGES

TO: unclassified

FROM: confidential

LIMITATION CHANGES

TO:

Approved for public release, distribution unlimited

FROM:

Distribution: USGO: others to Director, Defense Atomic Support Agency, Washington, D. C. 20301.

AUTHORITY

DSWA ltr., 18 Apr 1997; DSWA ltr., 18 Apr 1997

XRD
123

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BUREAU OF SHIPS GROUP
TECHNICAL INSPECTION REPORT.

Classification (Cancelled) (Changed to CONFIDENTIAL)
By Authority of Joint Chiefs of Staff Action of 15 April 1949
[redacted] Date [redacted]

OPERATION CROSSROADS.
U.S.S. BRULE (APA66).

TEST BAKER [U].

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Director
Defense Atomic Support Agency
Washington, D. C. 20301

[redacted]

1947,
107 p.
XRD-123
CONFIDENTIAL

~~OPERATION CROSSROADS~~

~~DIRECTOR OF SHIP MATERIAL~~

~~JOINT TASK FORCE ONE~~

[redacted]

Ldc

BUREAU OF SHIPS GROUP

TECHNICAL INSPECTION REPORT

Classification (~~Cancelled~~) (Changed to CONFIDENTIAL)
By Authority of JOINT CHIEFS OF STAFF ACTION OF 15 APRIL 1954
By John Boggart Date 24 Sept 54
AFSWC

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APPROVED:
CONFIDENTIAL
F.X. Forest,
Captain, U.S.N.

[redacted]

USS BRULE (APA66)

Page 1 of 107 Pages

GROUP 3
Downgraded at 3 year intervals;
Not automatically declassified.
1 JAN 66

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U.S.S. BRULE (APA 66)

SHIP CHARACTERISTICS

Building Yard: Consolidated Steel Corp.; Wilmington, California.

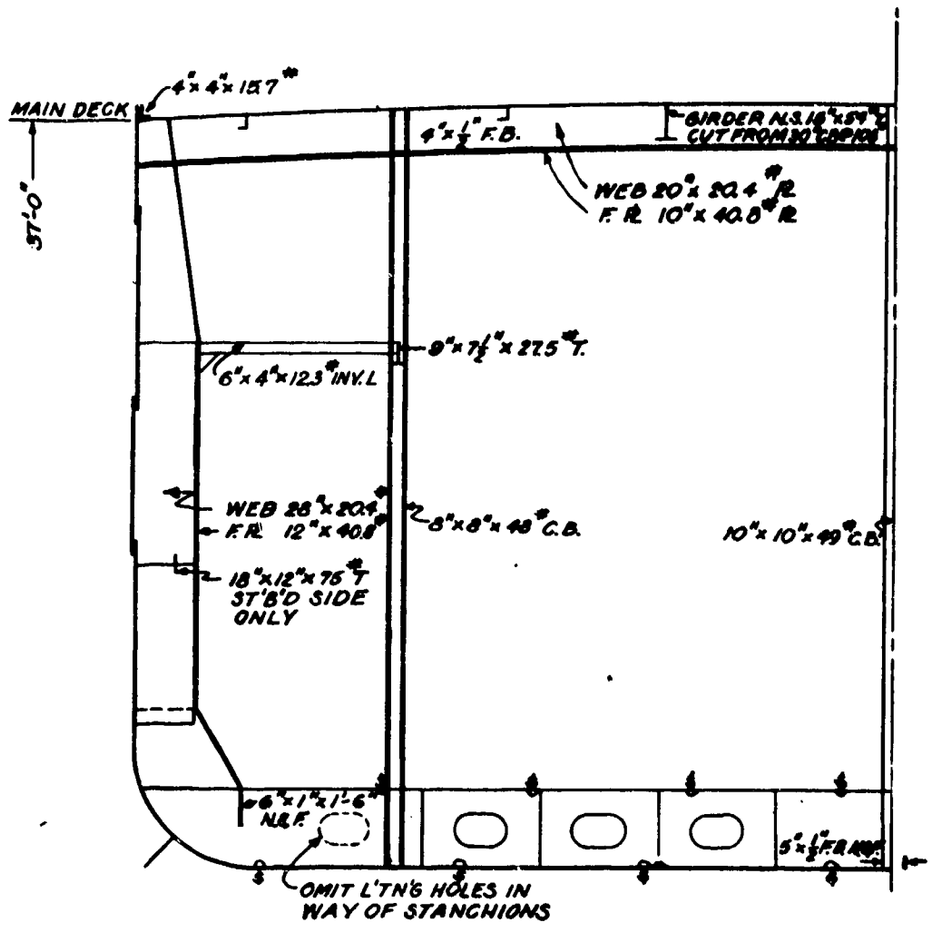
Commissioned: 31 October 1944.

HULL

Length Overall: 426 feet 0 inches.
Length on Waterline: 400 feet 0 inches.
Beam (extreme): 58 feet 0 inches.
Depth (molded to upper deck): 37 feet 0 inches.
Drafts at time of test: Fwd: 9 feet 8 inches.
Aft: 15 feet 8 inches.
Limiting displacement: 7,080 tons.
Displacement at time of test: 5,419 tons.

MAIN PROPULSION PLANT

Main Engines: Two sets of Westinghouse steam turbines, directly connected to Westinghouse main generators. Two main shaft motors.
Main Condensers: Two are installed in ship.
Boilers: Two Babcock and Wilcox boilers are installed in ship. 450 psi gauge - 750° F.
Propellers: Two are installed in ship.
Main Shafts: Two are installed in ship.
Ships Service Generators: Five are installed in ship.
Two - 250 KW. - 450 V. - A.C.
One - 150 KW. - 450 V. - A.C.
Two - 100 KW. - 120/240 V. - D.C.



FRAME 76 LOOKING AFT

MIDSHIP SECTION

TEST B

TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

Drafts were as follows:	Forward	Aft	List
Before Test B	9' - 8"	15'- 10"	0
After Test B	10' - 0"	16'- 6"	2° Port

The Forward Machinery Space has flooded to the waterline through a broken 3/4 inch nipple on the auxiliary condenser blowdown connection. The injection and overboard valves of this condenser were open during the test. The flooding could have been controlled if the crew had been aboard. The port shaft alley is about 65 percent flooded. The starboard shaft alley is about 45 percent flooded. This is considered to be the accumulation of water due to normal stern tube leakage during the time the ship was inactive.

(b) Structural damage.

HULL

No damage to the shell plating or to the structure in interior spaces was observed, although there apparently has been slight elastic deflection of the upper deck. There has been some dishing of exposed longitudinal bulkheads above the main deck on the port sides only: the maindeck passageway bulkhead is dished a maximum of 3 inches and all doors are dished; the upper deck bulkheads are dished a maximum of 1/2 inch; the double doors to the carpenter shop are dished 8 inches; the navigating deck bulkheads are dished a maximum of 1 inch. Nearly all of the upper deck cover panels of both cargo hatches have been dislodged and pushed into the space below.

One main deck pontoon cover section of each hatch has been dislodged and has fallen into the hold. Two strongbacks at the upper deck level of the forward cargo hatch were pushed down to the main deck level. Interior joiner work and furniture which was previously disarranged by Test A is somewhat further disarranged. During Test B all access closures were closed.

MACHINERY

No comment.

ELECTRICAL

Structural damage involving electrical equipment was negligible. A few floor plates under the propulsion control units were dislodged and thrown against the control cables.

(c) Other damage.

HULL

No comment.

MACHINERY

Machinery in the forward engine room was damaged by flooding. Holding down bolts were loosened on condenser and refrigeration equipment. Electric drinking foundations throughout the ship and a considerable number of small salt water lines (already weakened by corrosion), were broken. There is some other scattered minor damage.

ELECTRICAL

Damage to electrical equipment consisted essentially of the following:

1. Equipment on the lower level of the forward engine room was flooded.

2. The master gyro compass suspension springs were stretched.

3. Storage batteries in I.C. room were dislodged.

4. Holding down bolts on ship's service generators and bolts on exciter end bells showed signs of being stretched.

II. Forces Evidenced and Effects Noted.

(a) Heat.

HULL

No evidence.

MACHINERY

No evidence.

ELECTRICAL

No evidence.

(b) Fires and explosions.

HULL

No evidence.

MACHINERY

No evidence.

ELECTRICAL

No evidence.

(c) Shock.

HULL

Shock was not sufficiently severe to break mirrors or light bulbs. Relatively heavy masses on slender supports exhibited inertia effects. The curved radar plate on the fore-topmast broke off and landed on the upper deck, port, five frames forward of its original position. In the pressing room, first platform, starboard, a vertical rod supporting a relatively heavy electric switch at its upper extremity was bent to port.

Displacement of loose equipment in general is believed to have been caused by motion of the ship incident to the wave which struck the ship.

MACHINERY

This vessel received a moderately heavy underwater shock.

ELECTRICAL

Shock was apparently transmitted vertically through the hull and caused minor damage to electrical equipment. Several light bulbs were shattered. A socket in the after engine room was jarred loose. Several arc chutes in control cubicles were dislocated. Generator holding down bolts were stretched. Supporting springs for the master gyro compass were stretched. Storage batteries in the I.C. room were dislocated.

(d) Pressure.

HULL

The damage to the longitudinal bulkheads and doors on the port side above the main deck and to the distorted upper deck cargo hatch covers is the result of either air pressure or falling water.

MACHINERY

No evidence.

ELECTRICAL

No evidence.

(e) Any effects apparently peculiar to the Atom Bomb.

HULL

No comment.

MACHINERY

An underwater shock of this magnitude is apparently peculiar to the Atom Bomb.

ELECTRICAL

There were no apparent effects peculiar to the atom bomb except the radioactivity.

III. Effects of Damage.

(a) Effect on machinery and ship control.

HULL

No comment.

MACHINERY

The forward engine room is inoperable because of flooding, but this could have been prevented if the crew had been aboard. The other damage found would have no appreciable effect on operation. However, it was impracticable to test machinery or to open it for interior inspection because of radiological hazard. Other damage (particularly condenser leaks) may exist.

ELECTRICAL

The effect of damage was to reduce the power for propulsion 50% due to inoperability of the forward main motor.

Ship control was slightly impaired due to damage to the master gyro compass.

(b) Effect on gunnery and fire control.

HULL

No comment.

MACHINERY

No comment.

ELECTRICAL

Gunnery and fire control was slightly impaired due to damage to the master gyro compass.

(c) Effect on watertight integrity and stability.

HULL

The watertight integrity of the vessel has been affected only by the fracture of the 3/4 inch nipple in the forward machinery space. Stability is not appreciably affected.

MACHINERY

No comment.

ELECTRICAL

There was no effect on watertight integrity or stability due to electrical damage.

(d) Effect on personnel and habitability.

HULL

Except for the effects of radioactivity, it is considered that personnel and habitability would have been but slightly affected by the test.

MACHINERY

Damage to electric drinking fountains adversely affected habitability. Otherwise, it is not believed that personnel below decks or habitability would have been affected by the test except for radioactivity. The latter was very high when the ship was inspected 25 days after Test B.

ELECTRICAL

The effect of electrical damage on personnel and habitability was negligible.

(e) Total effect on fighting efficiency.

HULL

The longitudinal strength, buoyance, stability, watertight integrity, and seaworthiness of the vessel and the operability of equipment and machinery were not appreciably affected by the test. Although the fracture of a 3/4 inch nipple permitted leakage which flooded the forward machinery space, it is considered that this damage could have been quickly located and repaired without appreciable loss of fighting efficiency of a manned and operating ship.

MACHINERY

Doubtful. If the crew had been aboard, flooding could have been controlled. In this case, fighting efficiency would have been affected little or none insofar as can be determined by visual inspection. Additional damage may exist. It is not believed that this is sufficient to seriously affect the ship's military efficiency.

ELECTRICAL

The fighting efficiency of the vessel was seriously reduced due to a 50% reduction in propulsion power. This is a secondary effect caused by controllable flooding.

IV. General Summary of Observers' Impressions and Conclusions.

This vessel suffered no major structural damage. However, it was at a distance from the explosion at which damage from both pressure and shock is evident.

MACHINERY

The BRULE appears to have been near the limited range for serious mechanical damage from an attack of this nature on this type of vessel.

ELECTRICAL

All electrical damage vital to the operation of the vessel was caused by very slow flooding which could have been prevented had any of the crew been available in the engine room. Except for the above flooding and for damage to the master gyro compass, electrical damage would not have appreciably affected the operation of the vessel and could easily have been repaired by the ship's force.

V. Preliminary General or Specific Recommendations of Inspecting Group.

HULL

None.

MACHINERY

It is recommended that the design of pipe fittings be studied with a view to making them more resistant to shock. It is also recommended that salt water piping be made more resistant to corrosion perhaps by using copper nickel for this service.

ELECTRICAL

More adequate holding down bolts should be provided for the ship's service generator sets, especially the 100 K.W. sets.

Floor plates and other enclosing members of control cubicles and switchboards should be adequately secured.

Arc chutes for electrical contactors should be secured against shock. The securing measures should not depend upon gravity to hold the chute in place.

The securing means for storage batteries should be such that jars and plates are held in place and such that the probability of careless non-use is minimized.

TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Flooding; Drafts; List.

Drafts were as follows:	Forward	Aft.	List
Before Test B	9'-8"	15'-10"	0
After Test B	10'-0"	16'-6"	2° Port

The Forward Machinery Space has flooded to the waterline through a broken 3/4 inch nipple on the auxiliary condenser blow-down connection. The port shaft alley is about 65 percent flooded. The starboard shaft alley is about 45 percent flooded. This is considered to be the accumulation of water due to normal stern tube leakage during the time the ship was inactive.

(b) Structural Damage.

No damage to the shell plating or to the structure in interior spaces was observed, although there apparently has been slight elastic deflection of the upper deck. There has been some dishing of exposed longitudinal bulkheads above the main deck on the port side only: the main deck passageway bulkhead is dished a maximum of 3 inches and all doors are dished; the upper deck bulkheads are dished a maximum of 1/2 inch; the double doors to the carpenter shop are dished 8 inches; the navigating deck bulkheads are dished a maximum of 1 inch. Nearly all of the upper deck cover panels of both cargo hatches have been dislodged and pushed into the space below. One main deck pontoon cover section of each hatch has been dislodged and has fallen into the hold. Two strongbacks at the

upper deck level of the forward cargo hatch were pushed down to the main deck level. Interior joiner work and furniture which was previously disarranged by Test A is somewhat further disarranged. During Test B all access closures were closed.

(c) Other damage.

No comment.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and Explosions.

None.

(c) Shock.

Shock was not sufficiently severe to break mirrors or light bulbs. Relatively heavy masses on slender supports exhibited inertia effects. The curved radar plate on the fore-topmast broke off and landed on the upper deck, port, five frames forward of its original position. In the pressing room, first platform, starboard, a vertical rod supporting a relatively heavy electric switch at its upper extremity was bent to port.

Displacement of loose equipment in general is believed to have been caused by motion of the ship incident to the wave which struck the ship.

(d) Pressure.

The damage to the longitudinal bulkheads and doors on the port side above the main deck and to the distorted upper deck cargo hatch covers is the result of pressure.

III. Results of Test on Target.

(a) Effect on propulsion and ship control.

No comment.

(b) Effect on gunnery and fire control.

None.

(c) Effect on watertight integrity and stability.

The watertight integrity of the vessel has been affected only by the fracture of the 3/4 inch nipple in the forward machinery space. Stability is not affected.

(d) Effect on personnel and habitability.

Except for the effects of radioactivity, it is considered that personnel and habitability would have been but slightly effected by the test.

(e) Total effect on fighting efficiency.

The longitudinal strength, buoyancy, stability, watertight integrity, and seaworthiness of the vessel and the operability of equipment and machinery were not appreciably affected by the test. Although the fracture of a 3/4 inch nipple permitted leakage which flooded the forward machinery space, it is considered that this damage could have been quickly located and repaired without appreciable loss of fighting efficiency of a manned and operating ship.

IV. General Summary of Observers' Impressions and Conclusions.

This vessel suffered no major structural damage. However, it was at a distance from the explosion at which damage from both pressure and shock is evident.

V. Preliminary Recommendations.

None.

VI. Instructions for loading the vessel specified the following:

ITEM	LOADING
Fuel oil	Minimum
Diesel oil	Minimum
Ammunition	10%
Potable and reserve feed water	95%
Salt water ballast	1280 tons.

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

(a) Overall condition of vessel.

The explosion bore approximately 313 degrees relative. Nearly all structural damage occurred to vertical plating on the port side above the main deck where weather bulkheads and doors suffered light dishing from effects of blast and from the wave which apparently washed over the ship. No damage to shell plating is observed.

Cargo hatch battens, left off for Test A, were in place for Test B and watertight doors were closed. No boats were on board. Loose equipment is disarranged generally, due principally to the heavy motion of the ship.

No fires or explosions occurred.

Inspection of the ship was necessarily brief because of radiological conditions, but it is believed that all important damage has been noted.

Photos, pages 47 to 73 show general exterior views of the ship.

(b) General areas of hull damage.

Areas of structural damage are confined to vertical plating facing to port. Dishing of plating occurred on the navigating bridge level, the deck house top, the upper deck, and in the port main deck passageway. (Photos 152 - 1, 2, 3, 8; pages 74 , 75 , 76 , and 77).

Cargo hatch battens at the upper deck level were buckled by falling water and fell into the holds. One main deck pontoon cover of each hatch was thrown into the hold. (Photo 140-10, page 78).

(c) Apparent causes of hull damage in each area.

Dishing of bulkheads is considered to have been caused by air blast. Dislodging of weather deck hatch battens probably is due partly to blast and partly to the wave which washed over the ship.

(d) Principal areas of flooding with sources.

The forward engine room has flooded to the external waterline due to a broken 3/4 inch nipple on the salt water side of the auxiliary condenser. The port shaft alley was approximately 65 per cent flooded and the starboard alley, 45 per cent flooded, due to leaking propeller shaft stern tube glands. It is believed that all flooding could have been controlled, had the crew been aboard at the time of the test.

(e) Residual strength, buoyancy and effect of general condition of hull on operability.

Residual strength was not affected. Buoyancy and operability are affected only by flooding of the forward engine room and the shaft alleys.

B. Superstructure.

(a) Description of damage.

Both stacks are lightly dished on the port side. On the navigating deck, the port longitudinal weather bulkhead is dished a maximum of 1 inch. The door at frame 92, port, is moderately dished (Photo 152-8; page 77). A companionway door at frame 68, port, was blown off and fell to the upper deck. Joiner bulkheads in the companionway are damaged.

The curved-plate radar antenna on the foretopmast at frame 35, broke off and landed on the upper deck at frame 30, port. The foretopmast was bent and most of the other antenna were carried away in Test A. Joiner bulkheads and furniture in the superstructure

appeared to have received a slight amount of damage in addition to that sustained in Test A.

(b) Causes of damage in each area.

Damage in the superstructure is considered to have been caused by air blast and falling water.

(c) Evidences of fire in superstructure.

None.

(d) Estimate of relative effectiveness of plating against heat and blast.

The critical weight of plating of vertical structure facing in the general direction of the blast appears to be slightly in excess of 7-1/2 lbs.

No heat effects were observed.

(e) Constructive criticism of superstructure design.

It is considered that the air blast of Test B was of sufficient intensity to have caused numerous personnel casualties in exposed stations. Also, exposed personnel would have been injured or washed overboard by the water which washed over the ship. This ship suffered a high degree of radiological contamination.

Exterior plating should be not less than 10 lbs. in weight. Topside gunnery, fire control and ship control personnel should be housed in protective enclosures. Antennae in general should be made quickly replaceable.

C. Guns, Directors, Rangefinders.

No damage observed.

D. Torpedo Mounts, Depth Charge Gear.

Not applicable.

E. Weather Deck.

(a) General condition of deck and causes of damage.

The upper deck underwent slight elastic deflection but does not appear to have suffered additional permanent dishing over that attributable to Test A. Scratch gauges located vertically between the upper and main decks at frames 128 and 140 indicate a maximum relative elastic movement downward of 1 inch and upward of 1/2 inch. A tabulation of deck deflection scratch gage locations and readings is enclosed as an Appendix. Extensive flaking paint from the overhead is noted in the crews head aft.

Nearly all the upper deck cargo hatch battens were distorted and thrown into the forward and after holds. In each cargo hatch area, one main deck pontoon cover was dislodged and fell into the hold. Two athwartship strongbacks spanning the forward cargo hatch at the upper deck level are down (Photos 140-10, 152-4, 6; pages 78 , 79 , and 80).

In the port main deck passageway the longitudinal bulkhead is dished over its entire length, with a maximum permanent deflection of 3 inches. The after doors of the passageway are dished to a greater degree than attributable to Test A (Photos 152-1, 2; pages 74 and 75).

At the upper deck level, the port side double doors to the carpenter shop are dished 8 inches (Photos 152-3, page 76). At this level, the port longitudinal weather bulkhead of both the amidships and after deck house is uniformly dished approximately 1/2 inch.

Fragments, apparently from the bomb carrier, are scattered over the topside. No penetration of plating by these fragments is observed.

Elastic deflection of decks, dislodging of hatch closures, and dishing of vertical plating is considered to have been the effect of combined air blast and liquid loading.

Shock which was not severe enough to break mirrors or electric light bulbs, caused displacement of supported masses susceptible to inertia effects. Examples of this are:

(1) The curved plate radar antennae on the foremast at frame 35, landed on the upper deck at frame 30, port.

(2) In the pressing room on the first platform aft, a slender vertical steel rod supporting a relatively heavy electric switch at its upper extremity is bent to port. Loose equipment is thrown down generally, apparently because of heavy rolling of the ship.

(b) Usability of deck in damaged condition.

Usability of weather decks is not impaired.

(c) Condition of equipment and fittings.

The forward starboard cargo boom is adrift from its securing band near the top of the foremast. No additional bending of booms is observed over that attributable to Test A.

A wire-rope reel stowed horizontally at frame 85, port, between boat davits, jumped out of its sockets and fell to the upper deck. No damage to boat davits is observed.

F. Exterior Hull (Above Waterline).

(a) Condition of exterior hull plating and causes of damage.

No damage to the hull plating is observed.

(b) Condition of Exterior Hull Fittings and causes of damage.

There is no additional damage over that sustained in Test A.

(c) Details of any impairment of sheer strakes.

No damage to sheer strakes is observed.

G. Interior Compartments (Above Waterline).

(a) Damage to structure and causes.

No structural damage occurred in interior spaces.

(b) Damage to joiner bulkheads and causes.

Joiner bulkheads suffered distortion from air blast in way of a door which was blown off at frame 68, port, on the navigating deck. No other damage to joiner bulkheads is observed.

(c) Details of damage to access closures and fittings.

No damage occurred to access closures and fittings in interior compartments.

(d) Condition of equipment within compartments.

Throughout the ship, lockers, furniture, and loose equipment are damaged or disarranged. On the main deck in the forward and after cargo hatch areas, pipe berths are in disorder (Photo 140-10, page 78). In the radio room on the navigating deck, an instrument panel is dislodged and equipment is disarranged (Photo 152-7, page 81). Equipment in the ships office, port side aft, is disarranged (Photo 140-12, page 82). In compartment C-105 A, repair locker, main deck starboard, frames 149 to 152, bins are thrown down. In the ships laundry, port side aft on the first platform, laundry tub feet and drain piping are broken (Photo 2992-7, page 83). Batteries on the main deck and above were badly jarred and electrolyte is spilled. A scuttlebutt in the crews galley was damaged (Photo 2992-8, page 84).

(e) Evidence of Fire.

There is no evidence of fire in interior compartments.

H. Armor Decks.

Not applicable.

I. Interior Compartments (Below Waterline).

(a) Damage to structure and causes.

No structural damage below the waterline is observed.

(b) Damage to joiner bulkheads and causes.

There is no damage to joiner bulkheads below the waterline.

(c) Details of damage to access closures and causes.

No damage to access closures is observed.

(d) Condition of equipment within compartments.

Disarrangement of furniture and movable equipment is general. In the after engine room a workbench is knocked over and miscellaneous gear is dislodged (Photo 2992-4, page 85).

(e) Flooding.

The forward engine room was flooded to the exterior waterline and both shaft alleys were partially flooded.

(f) Damage in way of piping, cables, ventilation ducts, shafts, etc.

In the forward engine room, a broken 3/4 inch nipple on the salt water side of the auxiliary condenser resulted in flooding of the engine room. Loosening of shaft stern tube glands apparently caused flooding of the shaft alleys.

Damage to ventilation ducts is negligible.

(g) Estimate of reduction in watertight subdivision, habitability, and utility of spaces.

Watertight subdivision is unimpaired, except by leakage of stern tube glands and pipe breakage in the forward machinery space. Except for conditions of radioactivity, habitability is impaired only slightly and temporarily by disarrangement of loose equipment in interior compartments. Utility of the forward engine room was lost due to flooding, but this flooding could have been controlled if a crew had been on board.

J. Underwater Hull.

There is no known damage to the underwater hull, shafts, struts, or propellers.

Buoyancy and operability are affected by flooding of the shaft alleys and the forward engine room.

K. Tanks.

There is no known damage to tanks.

L. Flooding.

Flooding was caused by a broken salt water line and by leaking stern tube glands.

Drafts	Forward	Aft	List
Before Test B	9'-8"	15'-3"	0
After Test B	10'-6"	17'-5"	2° Port

The forward machinery space flooded to the waterline (about 16 feet) from a broken 3/4-inch nipple on the blow-down connection to the auxiliary condenser sea chest. The shaft alleys flooded through leaking stern tube glands. The port shaft alley flooded 65 per cent full

and the starboard alley, 45 per cent full. It is believed all flooding could have been controlled if the ships force had been aboard.

M. Ventilation.

(a) Damage to ventilation systems and causes.

Negligible.

(b) Evidences that the ventilation systems conducted heat, blast, fire, or smoke below decks.

None.

(c) Evidences that ventilation systems allowed progressive flooding.

None.

(d) Constructive criticism of design and construction of systems.

None.

N. Ship Control.

(a) Damage to ship control stations and causes.

Gyro repeaters were knocked out of their gimbals. No other damage to ship control was observed. The steering engine room remained dry and machinery foundations appeared undamaged.

(b) Constructive criticism of ship control systems.

No comment.

O. Fire Control.

No damage to fire control stations was observed.

Personnel in exposed stations should be protected from the effects of blast and radioactive water by enclosed shelters.

P. Ammunition Behavior.

Not observed. However, it is believed that heavy rolling such as this ship apparently underwent would be sufficient to cause disarrangement of ammunition stowages.

Q. Ammunition Handling.

No damage to ammunition hoists is apparent.

R. Strength.

(a) Permanent hog or sag.

There is no evidence of any hog or sag.

(b) Evidence of transverse or racking strains.

None.

(c) Shear strains in hull plating.

There is no damage in hull plating.

(d) Details of any local failures in way of structural discontinuities.

None.

(e) Evidence of panel deflection under blast.

There is evidence that the upper deck deflected elastically, but this deflection was not sufficient to cause damage to supporting stanchions or bulkheads. Vertical plating of weather bulkheads, facing to port, sustained slight permanent deflection.

(f) Machinery and gun foundations.

The condition of machinery and gun foundations appeared to be very good. No damage was observed.

TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

The forward engine room was flooded to the outside water line. Water entered through a broken vent connection to #1 auxiliary condenser. This injection and overboard valves of this condenser were open during the test. The flooding could have been controlled if the crew had been aboard.

(b) Structural damage.

No data taken by machinery group.

(c) Other damage.

Machinery in the forward engine room was damaged by flooding. Holding down bolts were loosened on condenser and refrigeration equipment. Electric drinking fountains throughout the ship, and a considerable number of small salt water lines (already weakened by corrosion), were broken. There is some other scattered minor damage.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and Explosions.

No evidence.

(c) Shock.

This vessel received a moderately heavy underwater shock which caused all the damage mentioned above.

(d) Pressure.

No evidence.

(e) Any effects apparently peculiar to the Atom Bomb.

An underwater shock of this magnitude is apparently peculiar to the Atom Bomb.

III. Effects of Damage.

(a) Effect on machinery and ship control.

The forward engine room is inoperable because of flooding, but this could have been prevented if the crew had been aboard. The other damage found would have no appreciable effect on operation. However, it was impracticable to test machinery or to open it for interior inspection because of radiological hazard. Other damage (particularly condenser leaks) may exist.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on watertight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

Damage to electric drinking fountains adversely affected habitability. Otherwise, it is not believed that personnel below decks or habitability would have been affected by the test except for radioactivity. The latter was very high when the ship was inspected 25 days after Test B.

(e) Total effect on fighting efficiency.

Doubtful. If the crew had been aboard, flooding could have been controlled. In this case, fighting efficiency would have been affected little or none insofar as can be determined by visual inspection. Additional damage may exist. It is not believed that this is sufficient to seriously affect the ship's military efficiency.

IV. General Summary of Observers' Impressions and Conclusions.

The BRULE appears to have been near the limiting range for serious mechanical damage from an attack of this nature on this type of vessel.

V. Preliminary Recommendations.

It is recommended that the design of pipe fittings be studied with a view to making them more resistant to shock. It is also recommended that salt water piping be made more resistant to corrosion, perhaps by using copper-nickel for this service.

DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall condition.

The forward engine room was flooded but this could have been prevented if the crew had been aboard. Holding down bolts were loosened on condensers and refrigeration equipment. There was a considerable amount of minor damage. Insofar as can be determined by visual inspection, there is no major mechanical damage, but damage such as condenser leaks may exist that could not be found by this type of inspection.

NOTE: It was not practicable to operate any machinery or to open machinery for interior inspection because of radiological hazard.

(b) Areas of major damage.

The forward engine room was flooded. No other major damage was apparent from visual inspection. Minor damage exists throughout the plant.

(c) Primary cause of damage.

The primary cause of all damage was underwater shock. This shock broke piping to the forward condenser which allowed the forward engine room to flood.

(d) Effect of target test on overall operation of machinery plant.

The forward engine room is inoperable because of flooding. As one of the two boilers is located in this space, steam power is reduced 50% and maximum speed is reduced to about 8 knots. If the crew had been aboard, the flooding could have been controlled.

Except for flooding, the damage, so far as can be determined from visual inspection, would have no appreciable effect on the overall operation of the machinery plant. However, some damage not found by visual inspection may exist.

B. Boilers.

No apparent damage was sustained except for minor damage to the deck of boiler #1. (Photo 2992-3, page 86).

C. Blowers.

No apparent damage. All blowers turned freely by hand.

D. Fuel Oil Equipment.

No apparent damage.

E. Boiler Feedwater Equipment.

No apparent damage.

F. Main Engines.

No apparent damage.

G. Reduction Gears.

Not applicable.

H. Shafting and Bearings.

No apparent damage.

I. Lubrication System.

No apparent damage.

J. Condensers and Air Ejectors.

On #1 auxiliary condenser (forward engine room) the vent connection (a 1/2 inch screwed nipple) broke. As this condenser had been left open during the test, breakage of the vent connection allowed water to enter the engine room and it flooded to the outside water line. Photo 2992-2, page 87 shows the break. The flooding could have been controlled if the crew had been aboard.

Foundation bolts were loosened on all condensers, main and auxiliary.

No other damage to condensers was apparent from visual external inspection, but there may be internal leaks.

K. Pumps.

No apparent damage.

L. Auxiliary Generators.

The cast iron saddle on the lube oil cooler on #2 auxiliary generator was broken. (Photo 2992-1, page 90). This would not affect operation.

There was no other apparent damage to turbo-generators.

M. Propellers.

Not observed. There is no reason to believe that the propellers were damaged.

N. Distilling Plant.

No apparent damage.

O. Refrigerating Plant.

Holding down bolts were stretched and loose. It is not believed that this would impair operation. No other damage to the refrigerating plant was apparent from visual inspection.

P. Winches, Windlasses, and Capstans.

No apparent damage.

Q. Steering Engine.

No apparent damage.

R. Elevators, Ammunition Hoists, etc.

No apparent damage.

S. Ventilation (Machinery).

No apparent damage.

T. Air Compressors.

No apparent damage.

U. Diesels.

No apparent damage.

V. Piping.

Some small salt water lines, already weakened by corrosion, were broken. (See item "J" for description of break causing flooding of forward engine room.)

There was no other apparent damage to piping.

W. Miscellaneous.

(a) Messing machinery.

No apparent damage.

(b) Messing equipment.

Galley ranges had their top plates disarranged. (Photo AB-CR100-2992-5). Electric drinking fountains throughout the ship were wrecked. (Photo AB-CR100-2992-8)

(c) Laundry equipment.

No apparent damage was found except cast iron supporting brackets on the sink were broken. (Photo 2992-7, page 83).

(d) Machine shop equipment.

The work bench in the after engine room fell aboard and was wrecked. (See photo 2992-4, page 85).

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding; sources.

Drafts not noted.

(b) Structural damage.

Structural damage involving electrical equipment was negligible. A few floor plates under the propulsion control units were dislodged and thrown against the control cables.

(c) Damage.

Damage to electrical equipment consisted essentially of the following:

1. Equipment on the lower level of the forward engine room was flooded.

2. The master gyro compass suspension springs were stretched.

3. Storage batteries in I.C. room were dislodged.

4. Holding down bolts on ship's service generators and bolts on exciter end bells showed signs of being stretched.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There was no evidence of heat.

(b) Fires and explosions.

There was no evidence of fires or explosions.

(c) Shock.

Shock was apparently transmitted vertically through the hull and caused minor damage to electrical equipment. Several light bulbs were shattered. A socket in the after engine room was jarred loose. Several arc chutes in control cubicles were dislocated. Generator holding down bolts were stretched. Supporting springs for the master gyro compass were stretched. Storage batteries in the I.C. room were dislocated.

(d) Pressure.

There was no evidence of damage by pressure.

(e) Any effects apparently peculiar to the Atom Bomb.

There were no apparent effects peculiar to the atom bomb except the radioactivity.

III. Effects of Damage.

(a) Effect on electrical equipment and ship control.

1. The effect of damage was to reduce the power for propulsion, 50% due to inoperability of the forward main motor.

2. Ship control was slightly impaired due to damage to the master gyro compass.

(b) Effect on gunnery and fire control.

Gunnery and fire control was slightly impaired due to damage to the master gyro compass.

(c) Effect on water-tight integrity and stability.

There was no effect on water-tight integrity or stability due to electrical damage.

(d) Effect on personnel and habitability.

The effect of electrical damage on personnel and habitability was negligible.

(e) Total effect on fighting efficiency.

The fighting efficiency of the vessel was seriously reduced due to a 50% reduction in propulsion power.

IV. General Summary of Observer's Impressions and Conclusions.

All electrical damage vital to the operation of the vessel was caused by very slow flooding which could have been prevented had any of the crew been available in the engine room. Except for the above flooding and for damage to the master gyro compass, electrical damage would not have appreciably affected the operation of the vessel and could easily have been repaired by the ship's force.

V. Recommendations.

(a) More adequate holding down bolts should be provided for the ship's service generator sets, especially the 100K.W. sets.

(b) Floor plates and other enclosing members of control cubicles and switchboards should be adequately secured.

(c) Arc chutes for electrical contactors should be secured against shock. The securing measures should not depend upon gravity to hold the chute in place.

(d) The securing means for storage batteries should be such that jars and plates are held in place and such that the probability of careless non-use is minimized.

DETAILED DESCRIPTION OF ELECTRICAL DAMAGE

A. General Description of Electrical Damage.

(a) Overall condition.

The overall condition of the electric plant is essentially the same as before Test B except as follows:

1. Propulsion motor and electrical equipment on lower level of forward engine room flooded.

2. Gyro compass suspension springs distorted.

3. Batteries in I.C. room dislocated.

4. Outboard blowers on both main propulsion motors would not turn freely.

(b) Areas of major damage.

Areas of major electrical damage are forward engine room and I.C. room.

(c) Primary causes of damage in each area of major damage.

Primary cause of electrical damage in forward engine room was shock which broke a pipe and caused flooding. In I.C. room primary cause was shock.

(d) The effects of the target test on the overall operation of the electric plant.

1. Operability of ships service generator sets was not appreciably affected by the test.

2. All boiler and engine auxiliaries cn lower level of forward engine room was rendered inoperable due to flooding. This resulted in reducing the available propulsion power 50%.

3. Electric propulsion was reduced 50% due to flooding of the forward propulsion motor.

4. Communications were not affected.

5. Fire control circuits were not affected.

6. Ventilation was not affected.

7. Effect on lighting was negligible.

8. Boat and cargo handling equipment were apparently unaffected.

(e) Types of equipment most affected.

Types of equipment most affected were:

1. Propulsion motors.

2. Master gyro compass.

3. Storage batteries.

4. Arc chutes on propulsion contactors.

B. Electric Propulsion Rotating Equipment.

1. The main propulsion motor in the forward engine room was flooded to a level above the shaft. No mechanical damage was evident.

2. The rotors of the outboard blower motors for both main propulsion motors cannot be rotated by hand. The cause is not evident. Radiological hazards prevented further examination.

3. The three 90 K.W. propulsion exciters had paint cracked around the junctions of the end bells and frames and around the end bell bolts. Bolts were tight. The operation of the generator sets was not affected.

C. Electric Propulsion Control Equipment.

(a) Arc chutes of both forward and after propulsion control cubicles were displaced. Other arc chutes were loosened at the lower supports. Reference photos 4185-12 and 4186-1; pages 89 and 91.

(b) Unsecured floor plates were jarred out of place and rested on incoming cables.

Recommendation:

(a) Arc chutes should be secured against shock. The securing means should not depend upon gravity to hold the chutes in place.

(b) Floor plates or other enclosing means for switchboards should be securely held against shock. Protective plates should be of as light gauge material as practicable.

D. Ship's Service Generators.

(a) Holding down bolts on ship's service AC generator sets in both engine rooms showed signs of shock by cracking of paint around the bolt heads. The bolts appeared to be tight. Operation of the sets was apparently not impaired.

(b) A cast iron saddle securing the oil cooler on generator #2 was broken. Operation of the cooler apparently was not affected. Reference photograph 2992-1, page 90.

Recommendation:

Holding down bolts should be of the through type with nuts. Cap screws such as used on the 100 K.W. generator sets should extend through the supporting frame work in such a location that lock nuts can be used.

E. Emergency Generators.

The emergency generator was not examined due to radiological condition in the generator room.

F. Switchboards and Distribution Panels.

(a) Panels and switchgear installed on the lower level of the forward engine room were flooded. No other damage to switchgear was noted.

G. Wiring, Wiring Equipment and Wireways.

(a) Wiring and equipment on the lower level of the forward engine room was flooded. No other damage to wiring equipment was noted.

H. Transformers.

No damage observed.

I. Submarine Propelling Batteries.

Not applicable.

J. Portable Batteries.

Batteries located on shelves in the I.C. and gyro room were dislocated due to shock. Batteries were fitted snugly into shelves but had no batten to prevent them from being dislocated. Batteries in other locations were not observed.

Recommendation - The securing means for storage batteries should be such that jars and plates are held in place and should be such that the probability of careless non-use is minimized. Reference photo - 4185-8, page 92.

K. Motors, Motor Generator Sets and Motor Controllers.

Motors and controllers on the lower level of the forward engine room were flooded. No other damage to motors or controllers was noted.

L. Lighting Equipment.

Lighting bulbs, fixtures and equipment appeared undamaged except one fixture in front of the switchboard in the after engine room. This fixture had the socket jarred loose.

M. Searchlights.

Searchlights were noted only from the deck below and from a boat alongside. They appeared to be the same as before Test B.

N. Degaussing Equipment.

Degaussing equipment was not observed after Test B.

O. Gyro Compass Equipment.

Three gimbal ring supporting springs were missing on the after side of the compass. All remaining springs on the after side were distorted allowing the outer gimbal ring to drop about three inches below its normal position. The rotor suspension cable seems to be undamaged and it is believed from visual inspection that the compass is still operable. The compass is a Sperry Dodge Mark XIV - Mod. O.

P. Sound Powered Telephones.

Sound powered telephones were observed in machinery spaces and quarter deck only. They all appeared normal except as follows:

(a) One phone on quarter deck was water soaked.

(b) One phone in the auxiliary machinery space fell to the deck and was apparently water soaked.

Q. Ship's Service Telephones.

Not applicable.

R. Announcing Systems.

The transmitter for the announcing system had the cover open and had been water soaked. Other parts of the announcing system were not observed.

S. Telegraphs.

No damage was evident by visual inspection.

T. Indicating Systems.

No damage was evident by visual inspection.

U. I.C. and A.C.O. Switchboards.

No damage was evident by visual inspection.

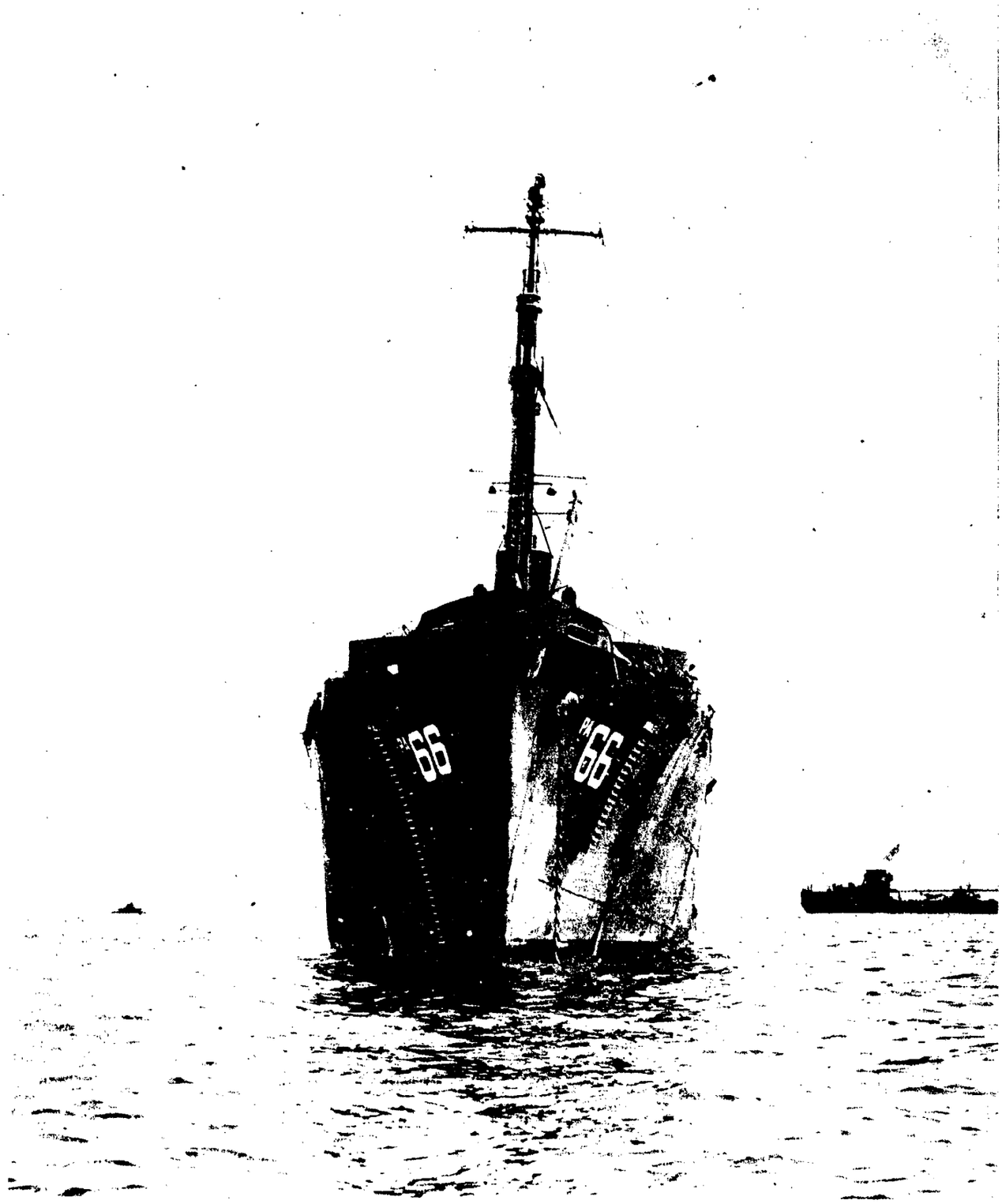
V. F.C. Switchboards.

No damage was evident by visual inspection.

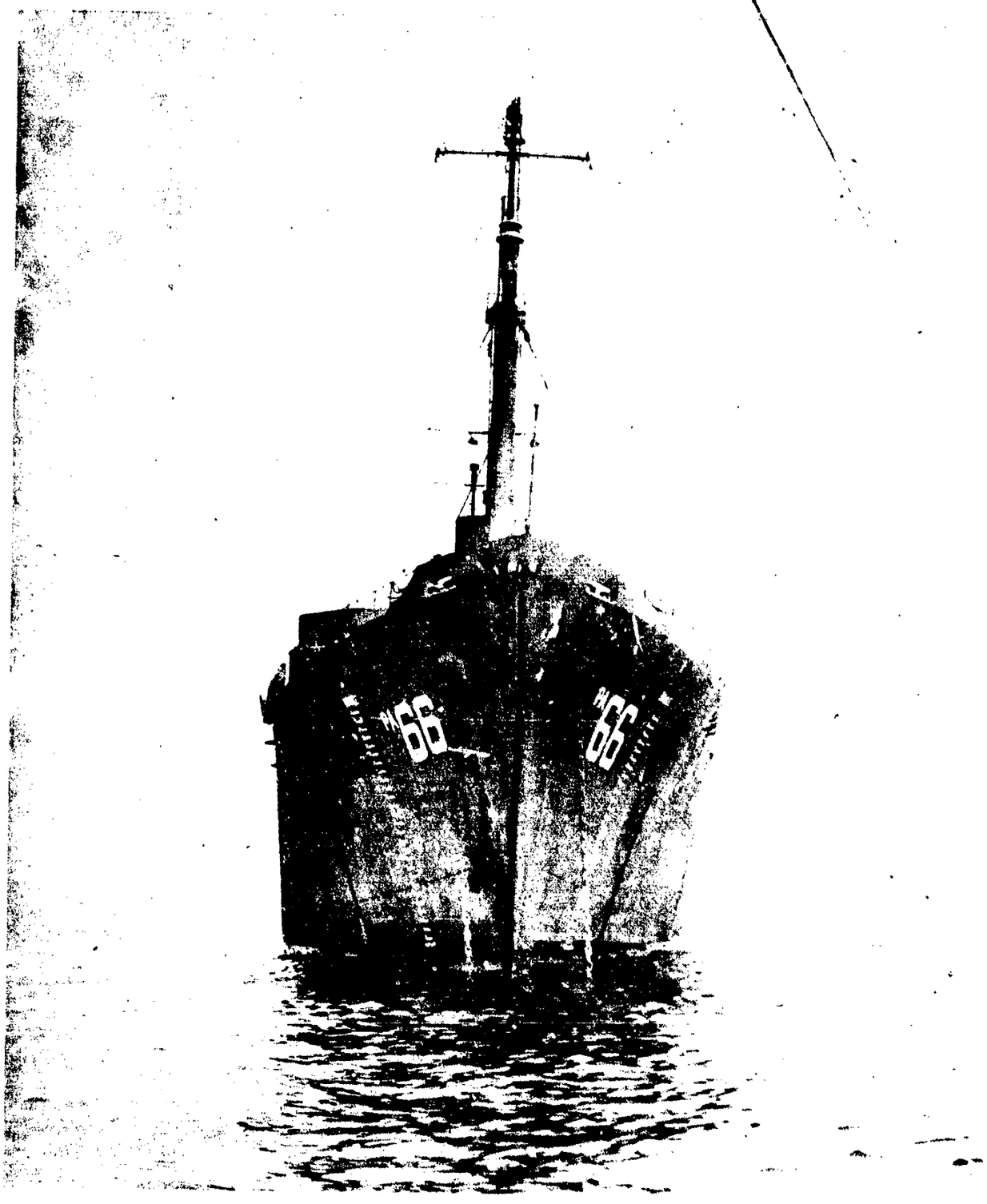
SECTION IV

PHOTOGRAPHS

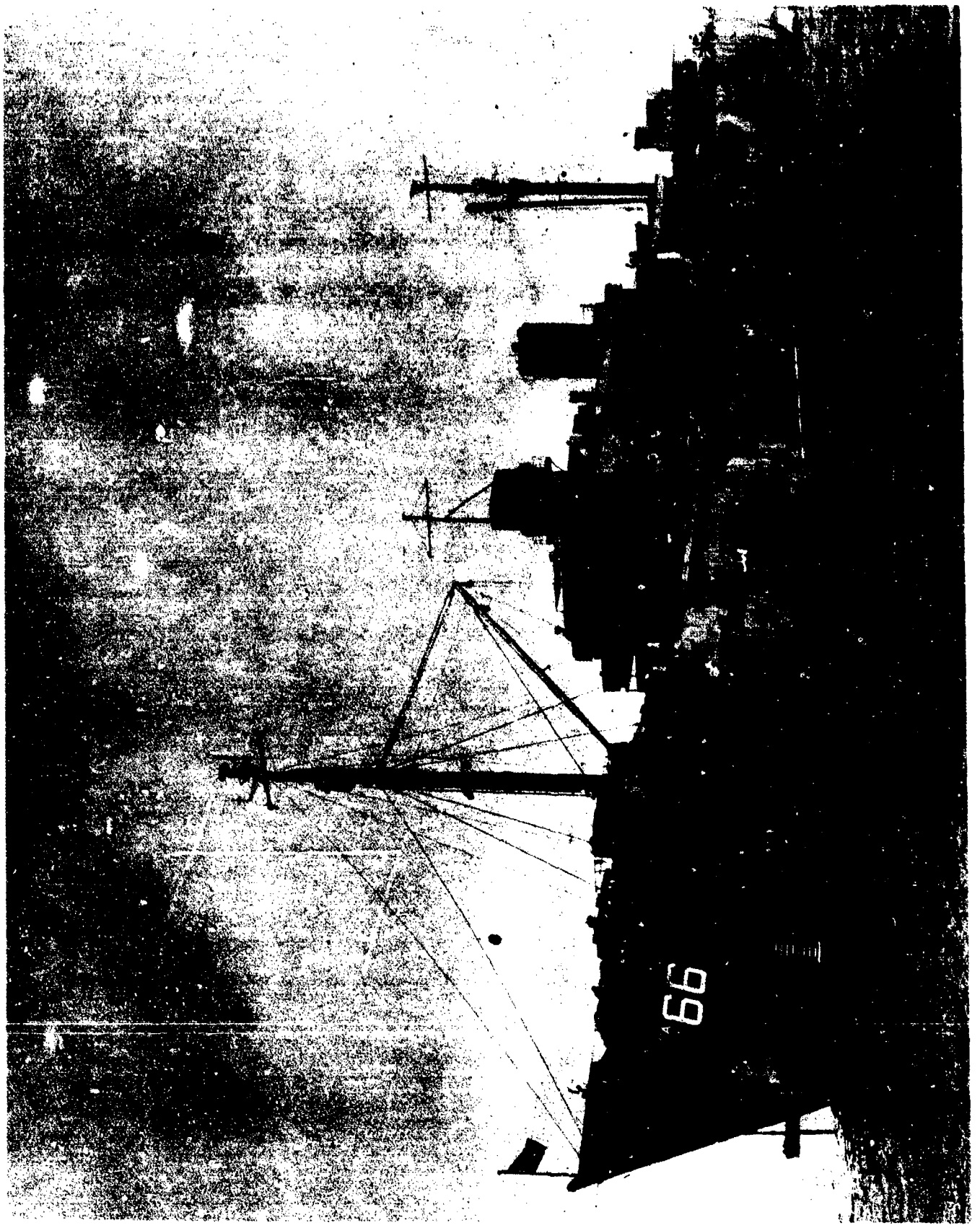
TEST BAKER



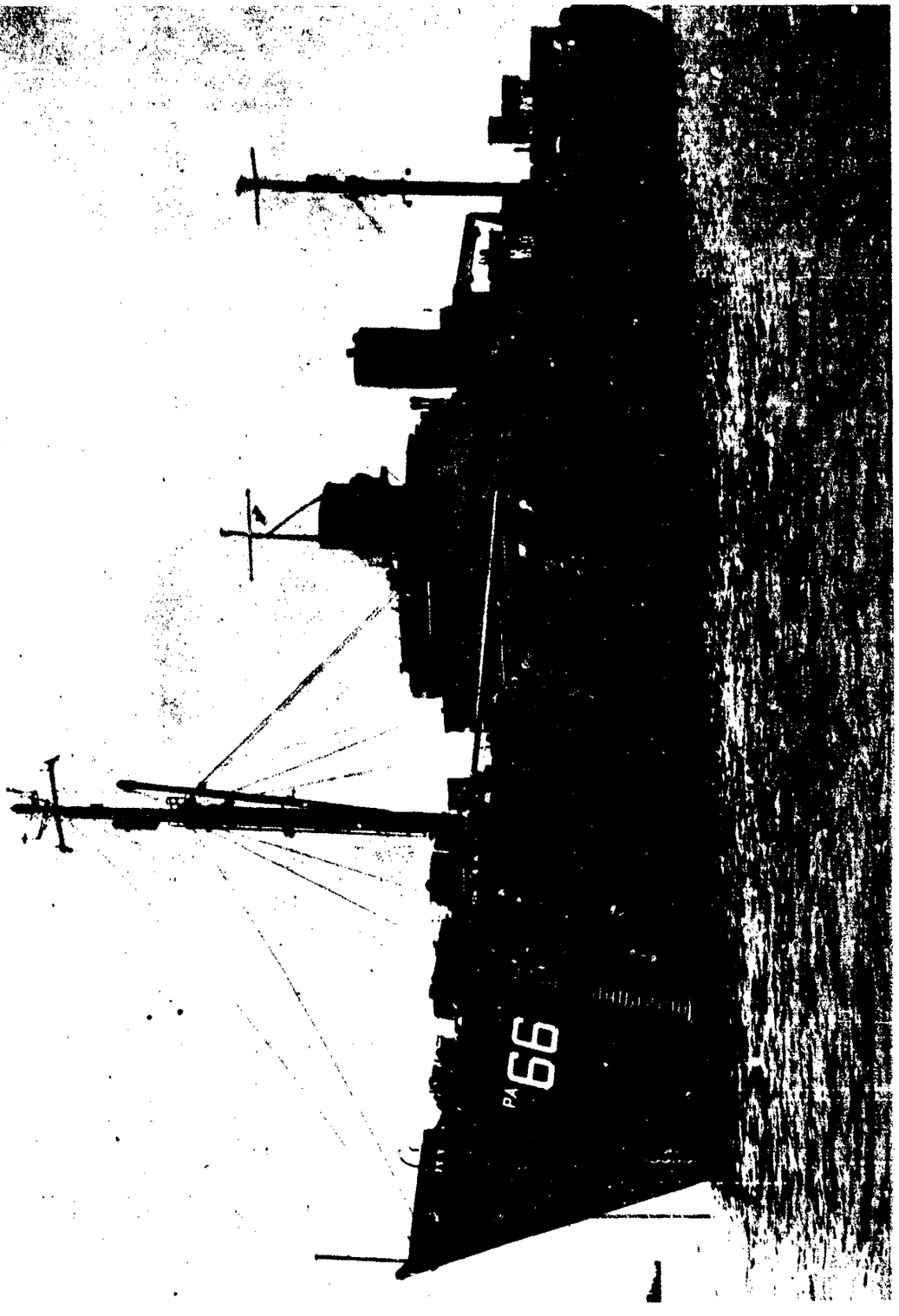
BB-CR-227-513-70. Bow before Test B.



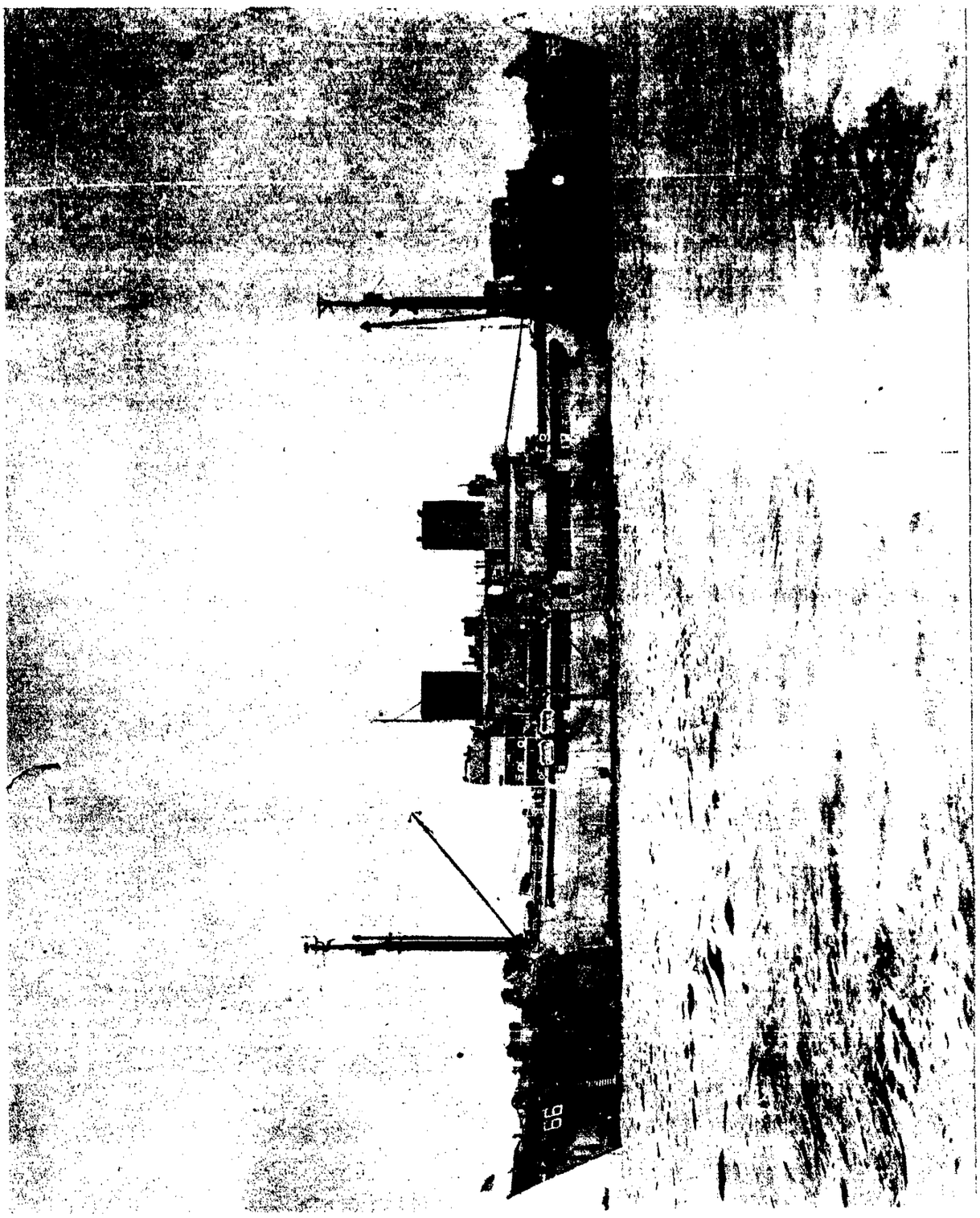
AB-CR-227-283-18. Bow after Test B.



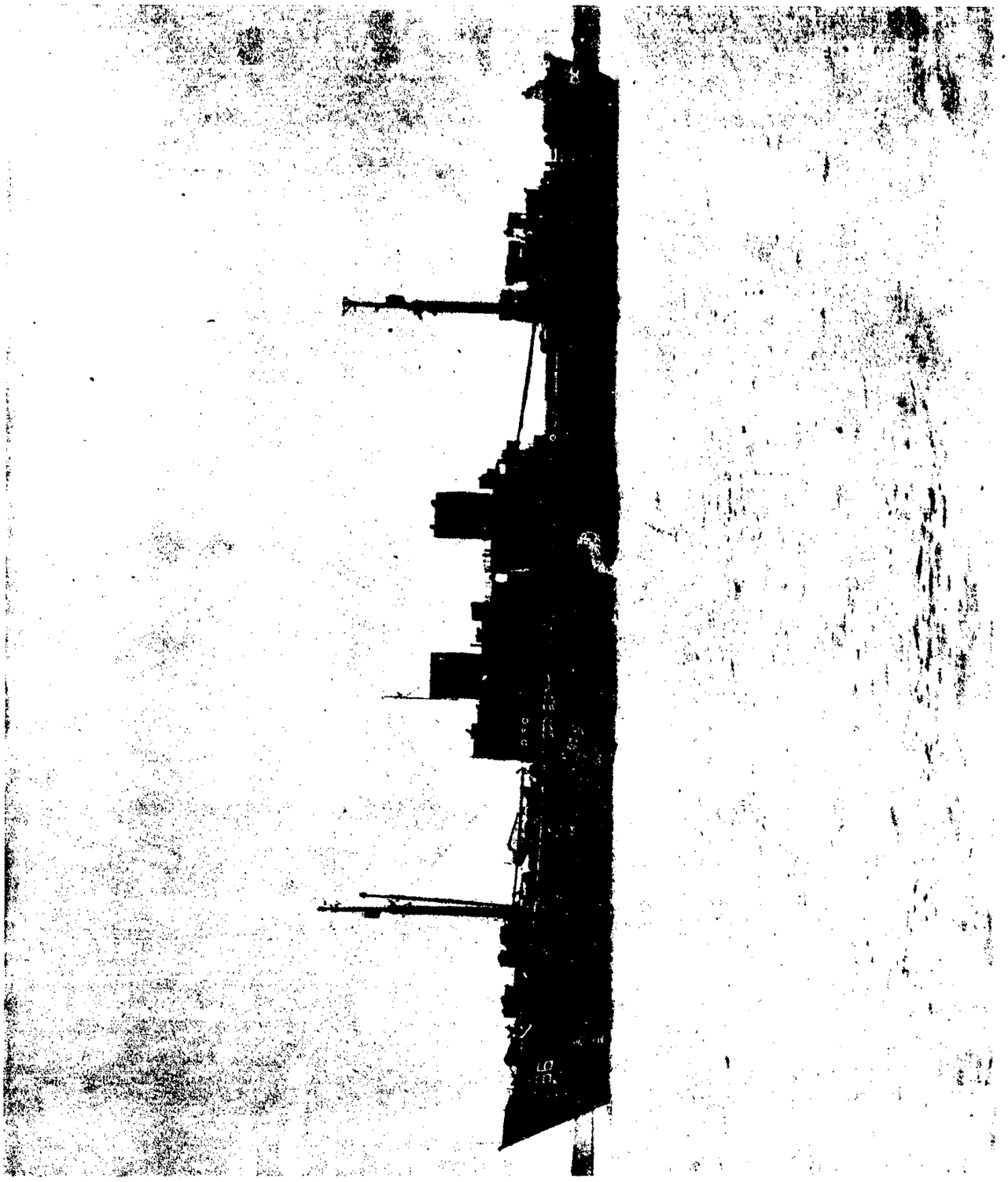
BB-CR-227-513-77. Port bow before Test B.



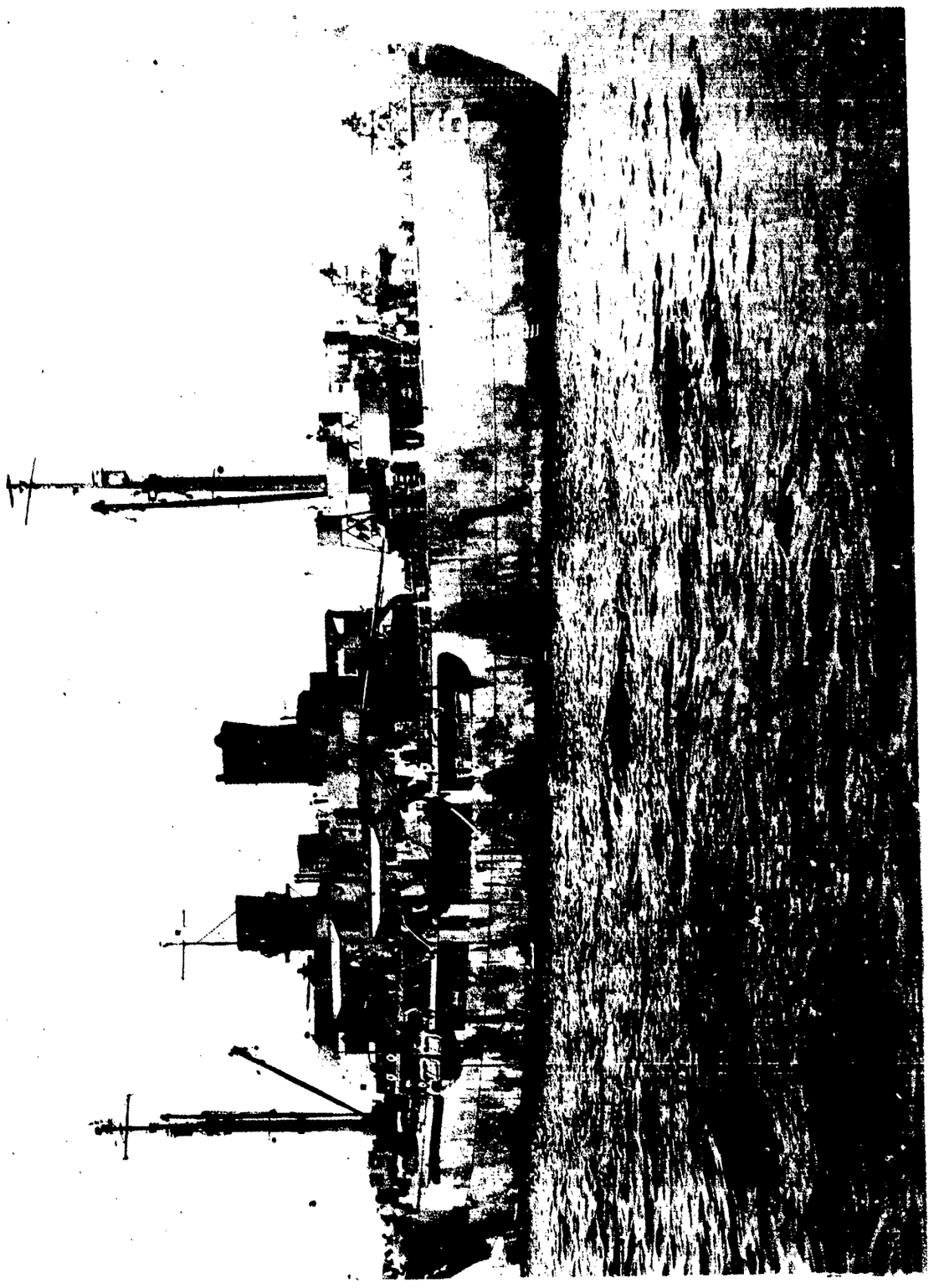
AB-CR-227-283-19. Port bow after Test B.



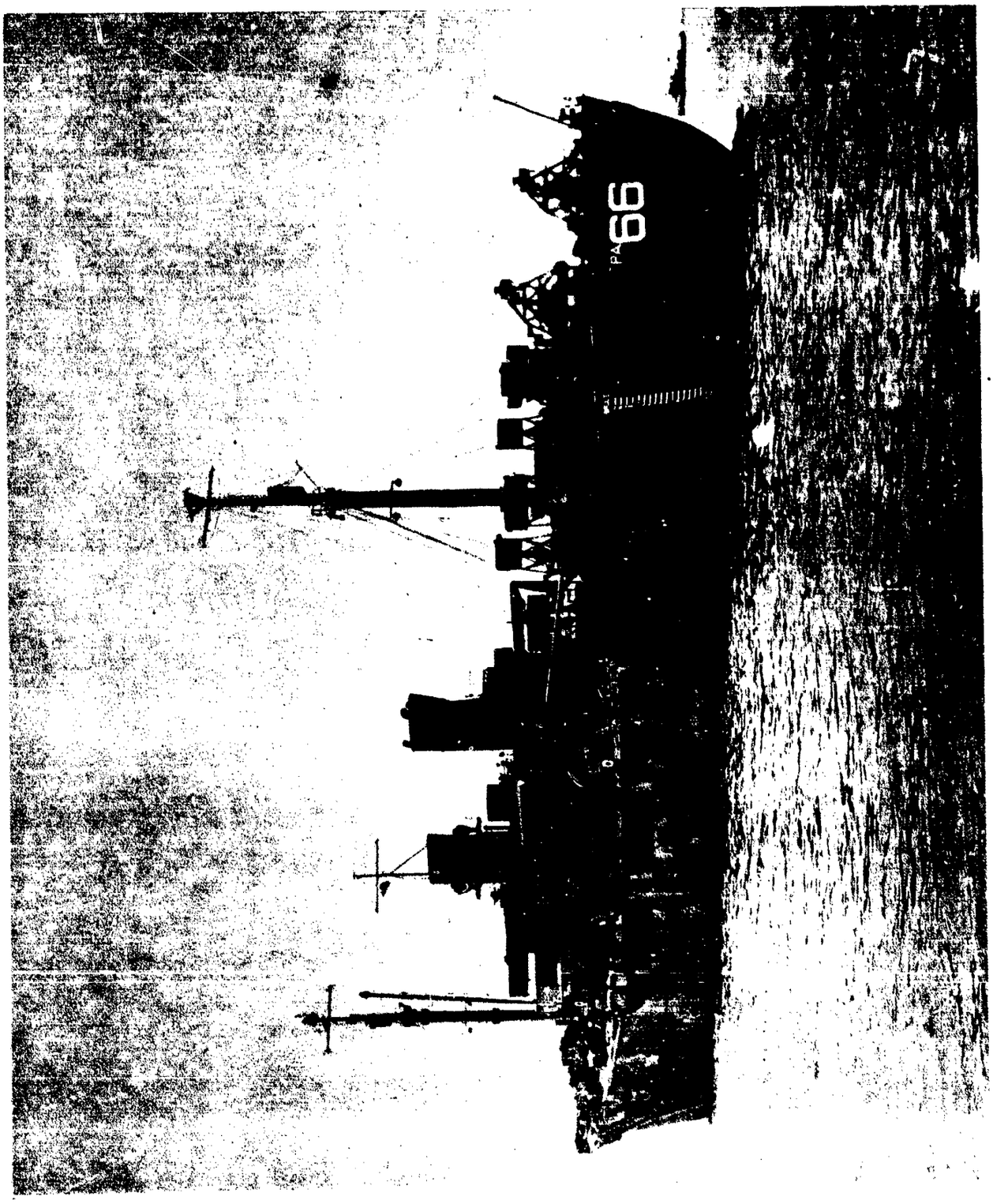
BB-CR-227-513-76. Port beam before Test B.



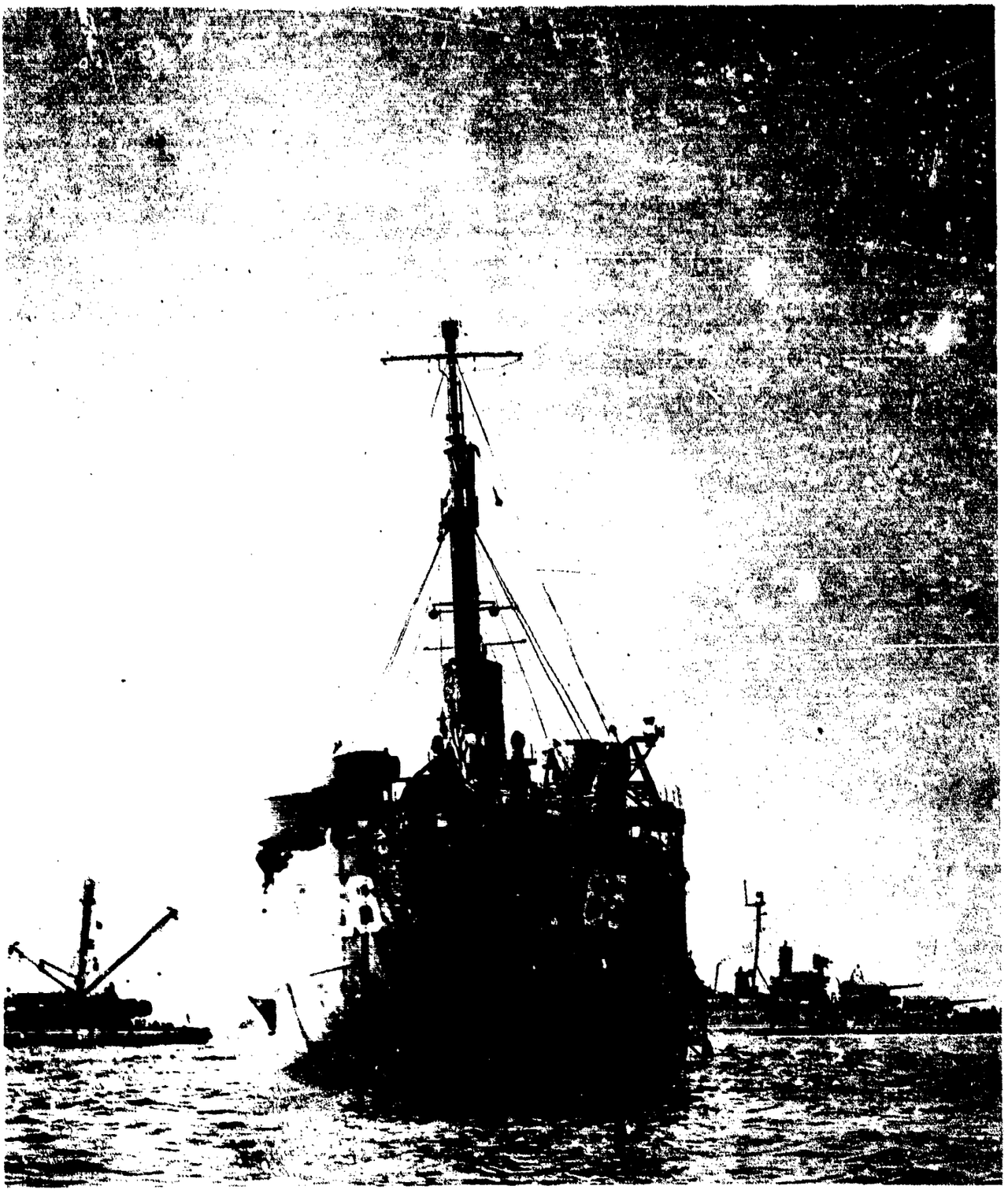
AB-CR-227-283-20. Port beam after Test B.



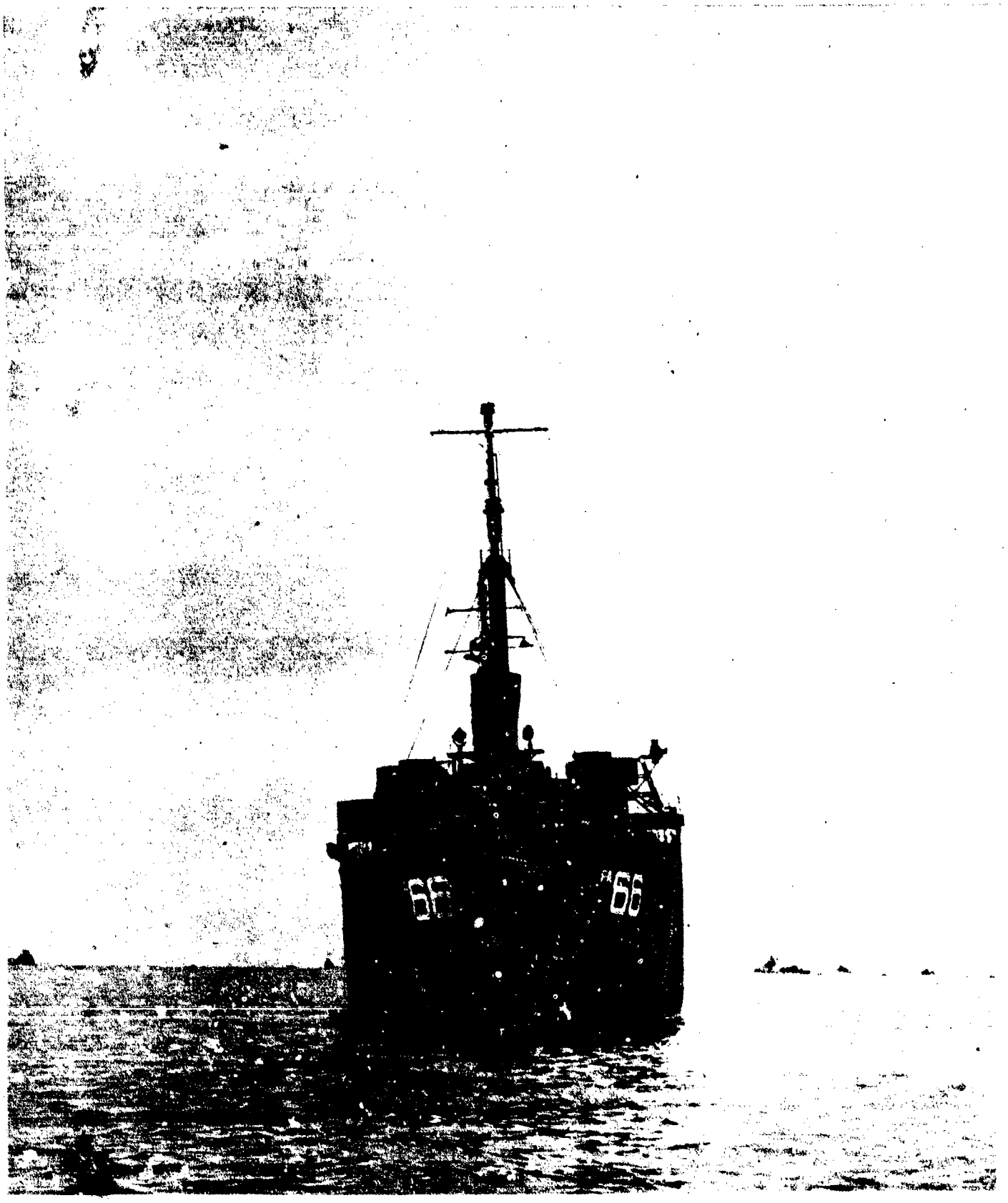
BB-CR-227-513-75. Port quarter before Test B.



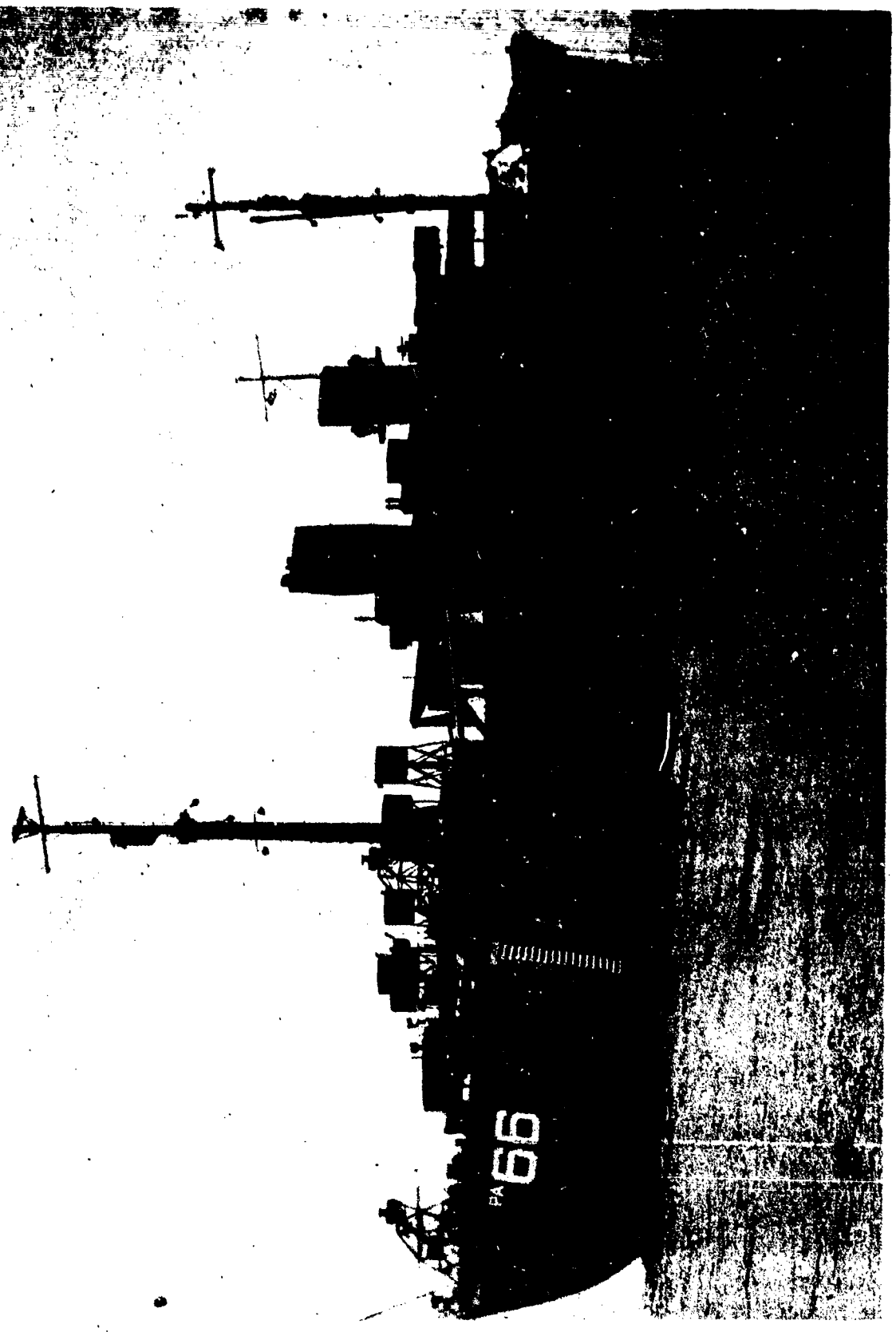
AB-CR-227-283-21. Port quarter after Test B.



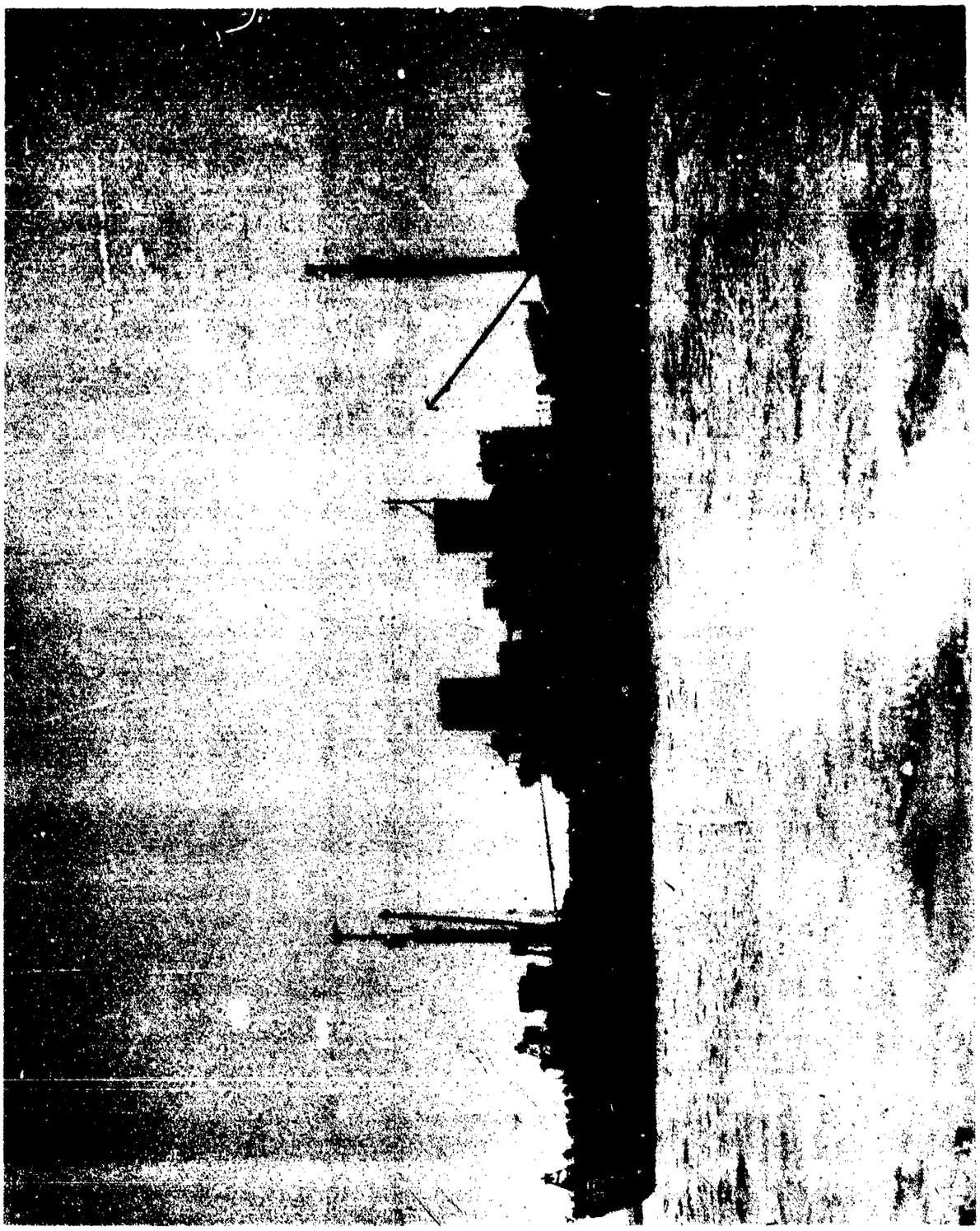
BB-CR-227-513-74. Stern before Test B.



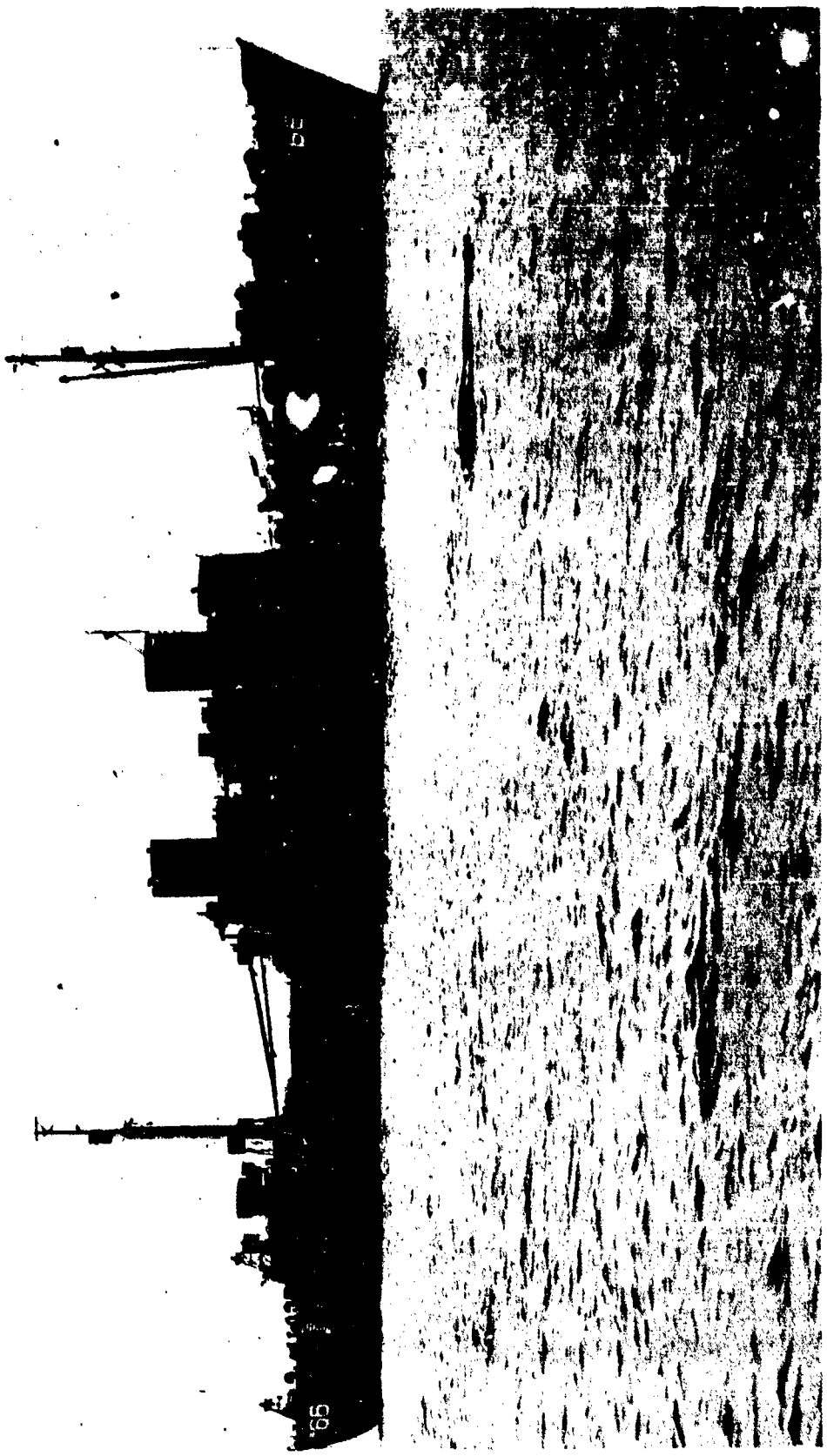
AB-CR-227-283-22. Stern after Test B.



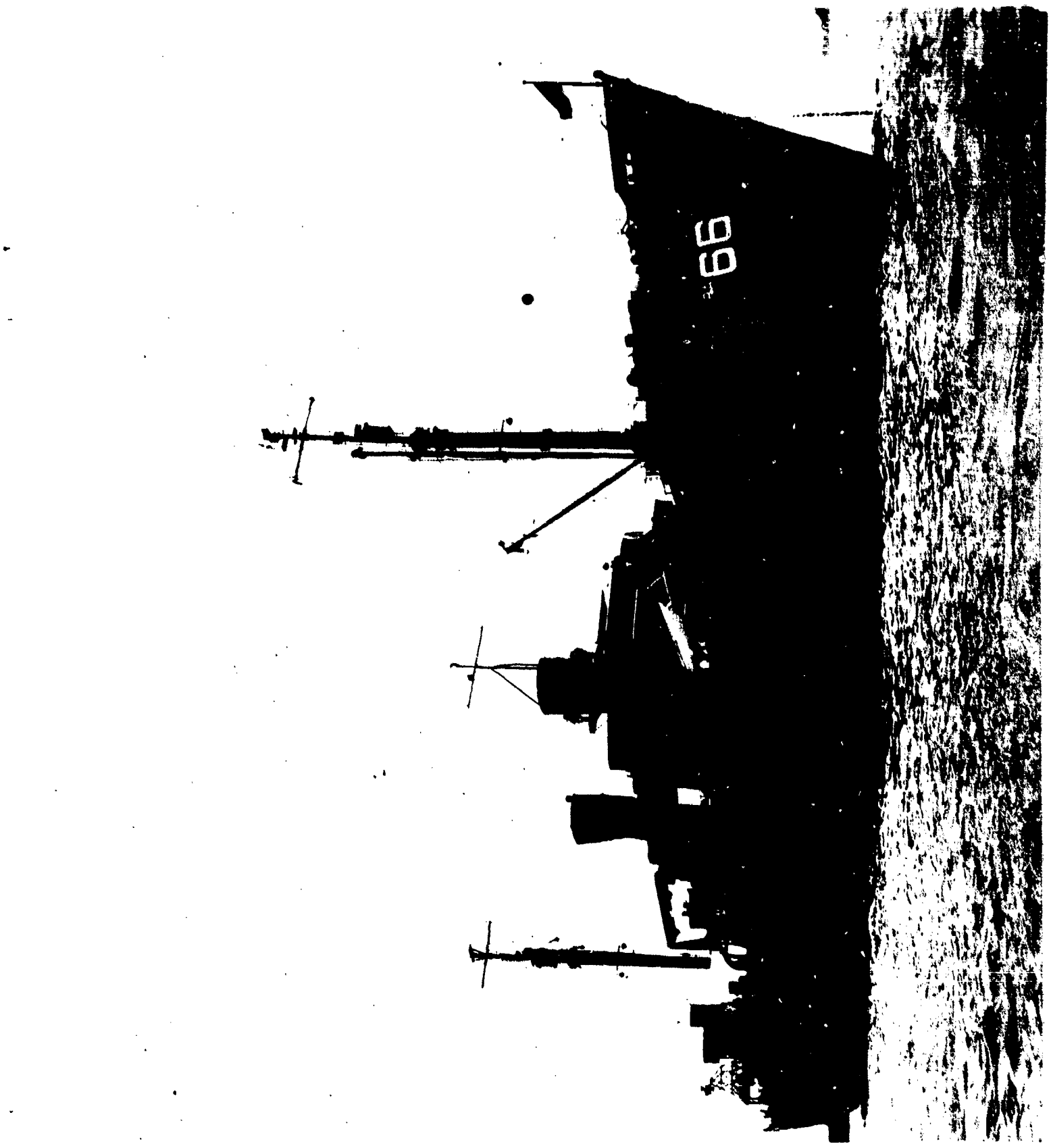
AB-CR-227-283-23. Starboard quarter after Test B.



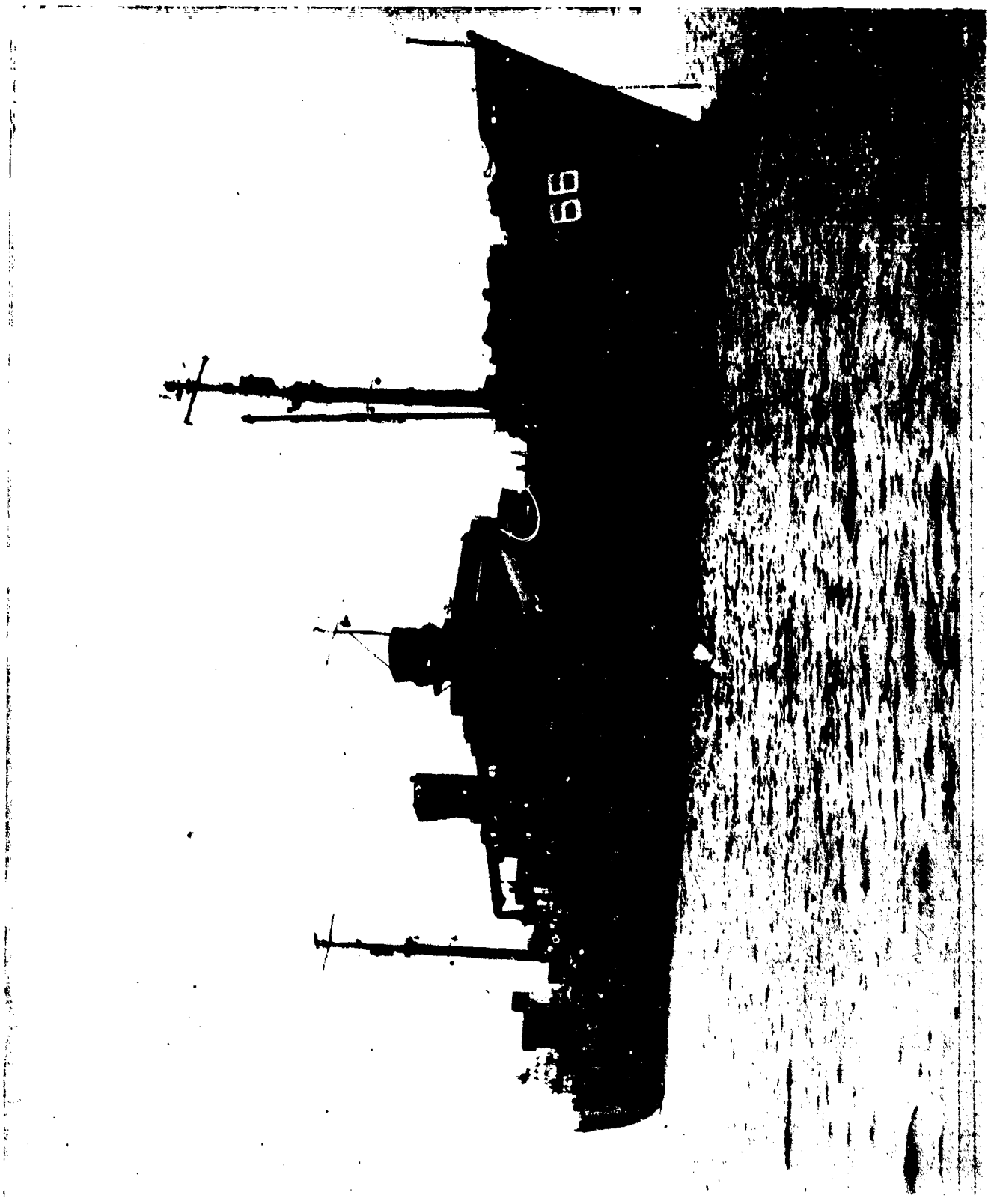
BB-CR-227-513-72. Starboard beam before Test B.



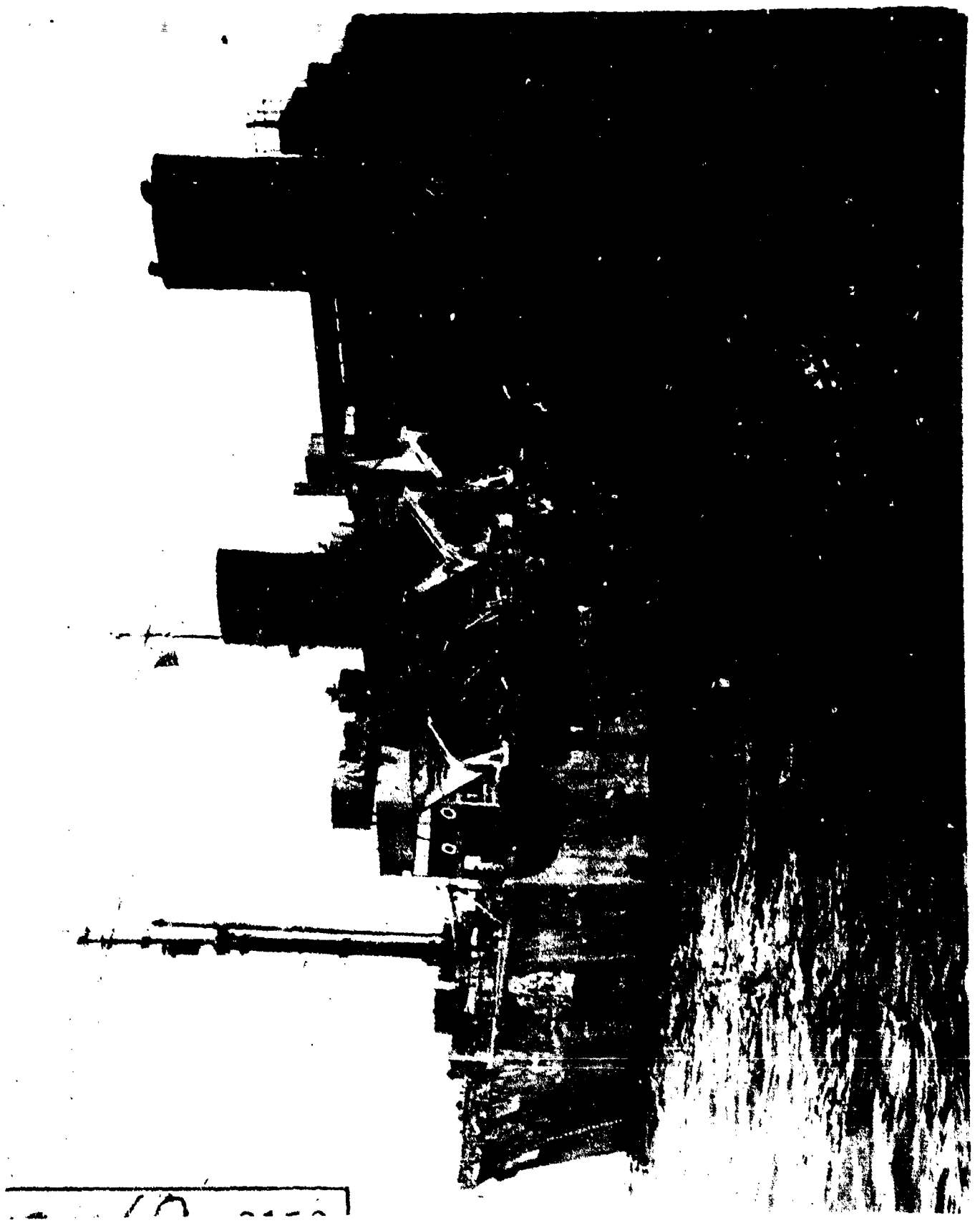
AB-CR-227-283-24. Starboard beam after Test B.



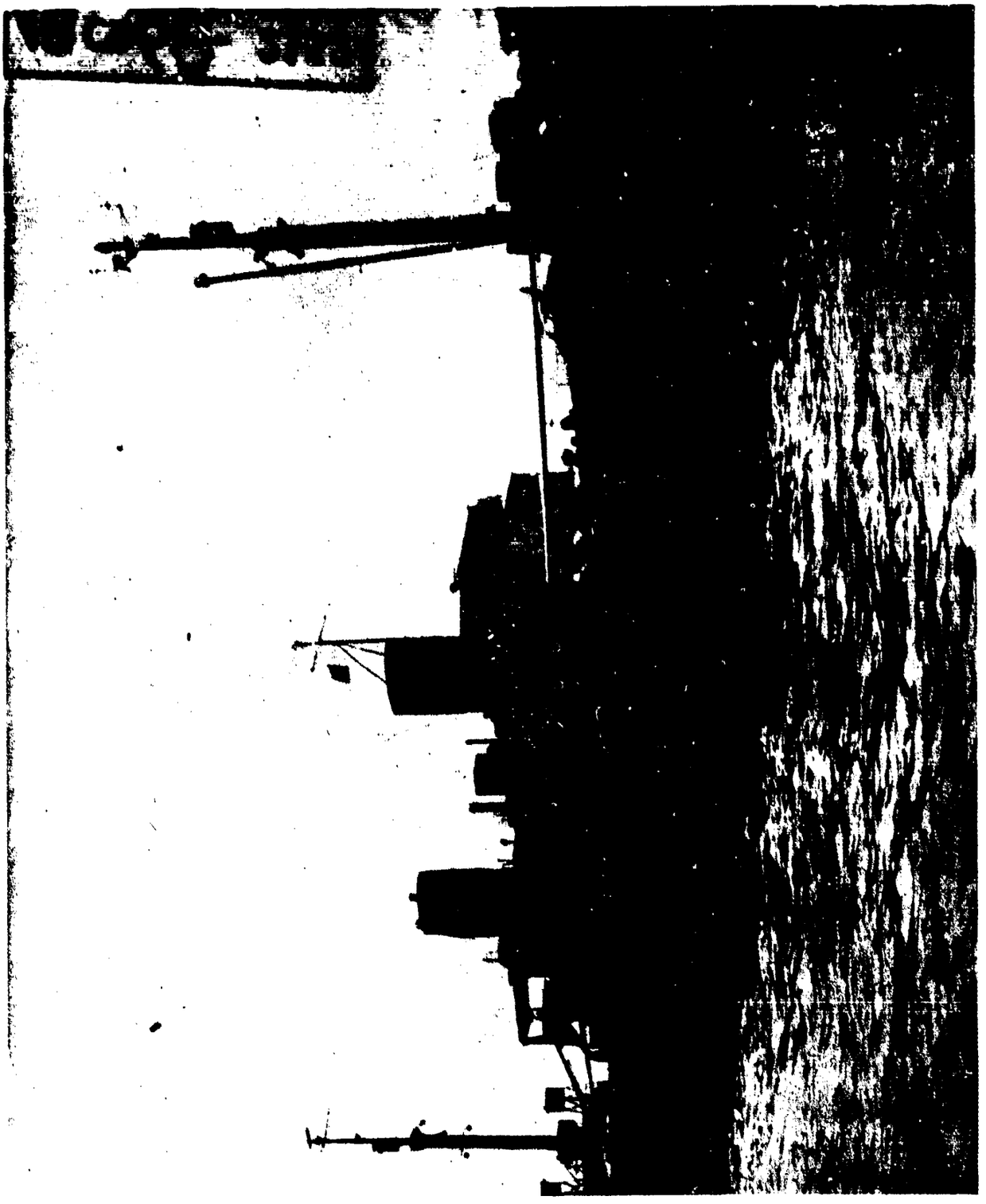
BB-CR-227-513-71. Starboard bow before Test B.



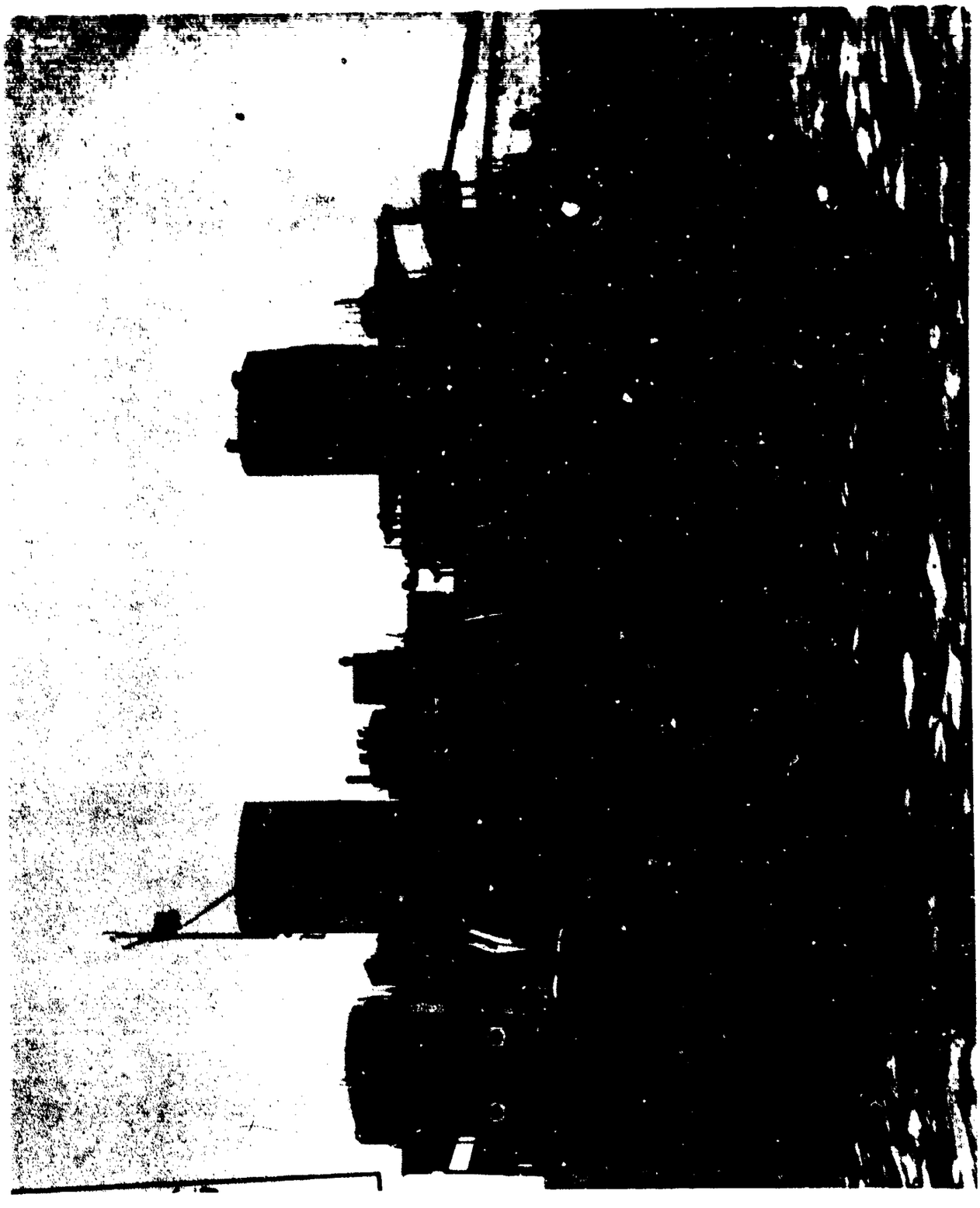
AB-CR-227-283-17. Starboard bow after Test B.



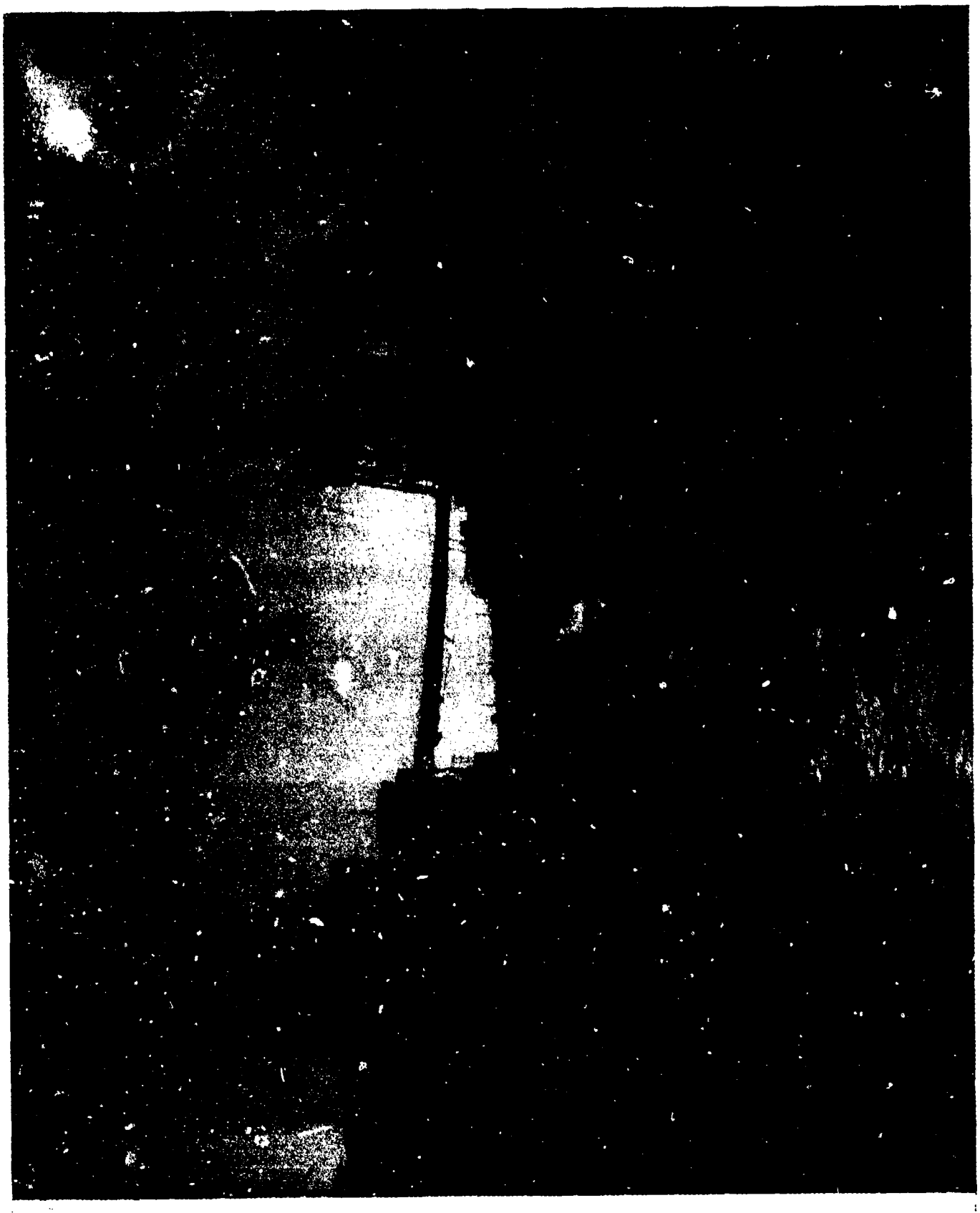
AB-CR-68-2152-11. Port side bow to frame 114.



AB-CR-68-2152-8. Port side frames 19 to 140.



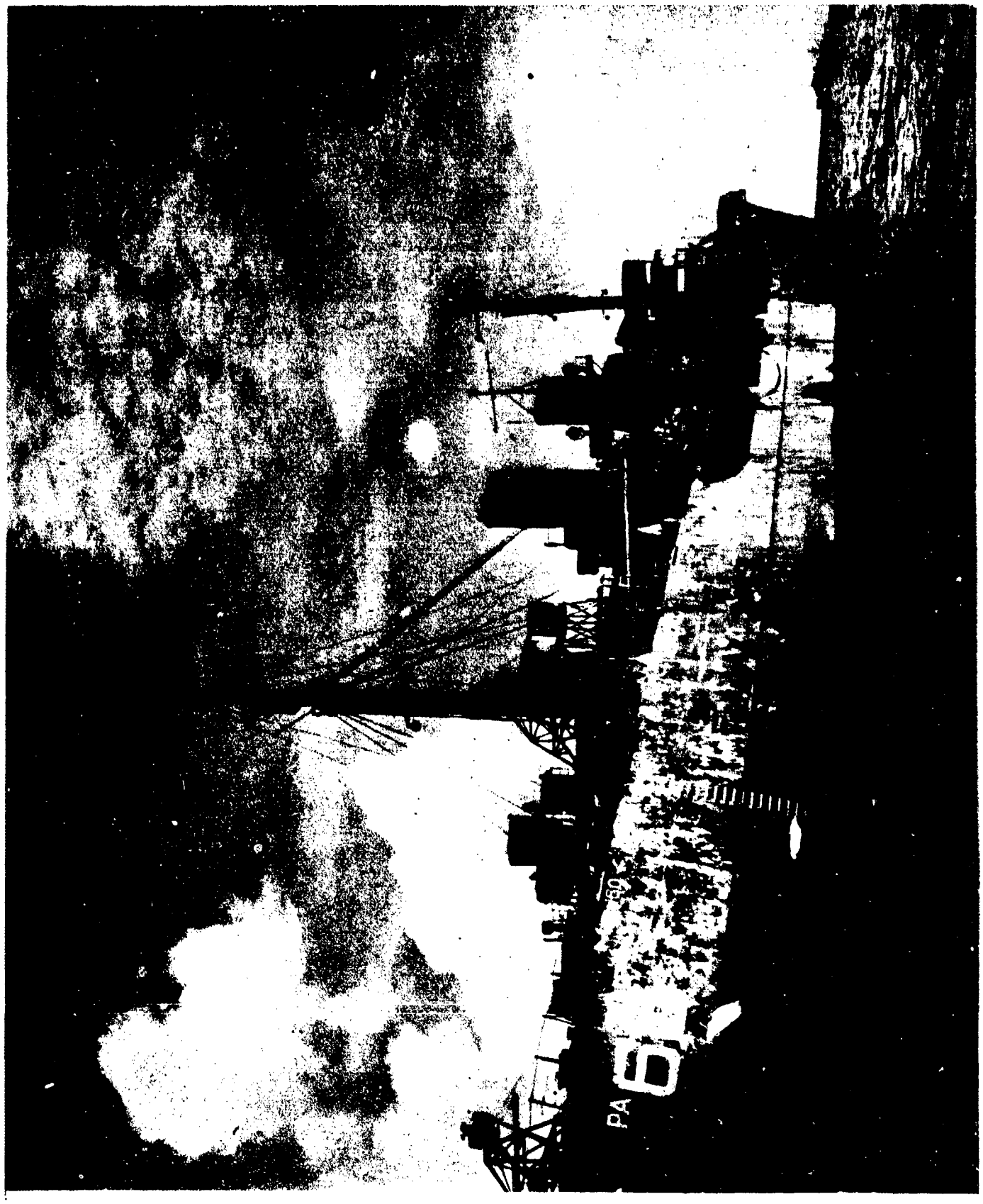
AB-CR-68-2152-10. Port side frames 56 to 118.



AB-CR-68-2152-12. Port side frames 88 to 150.

AB-CR-68-2152-9. Port side frames 78 to stern.

AB-CR-68-2151-1. Stern.



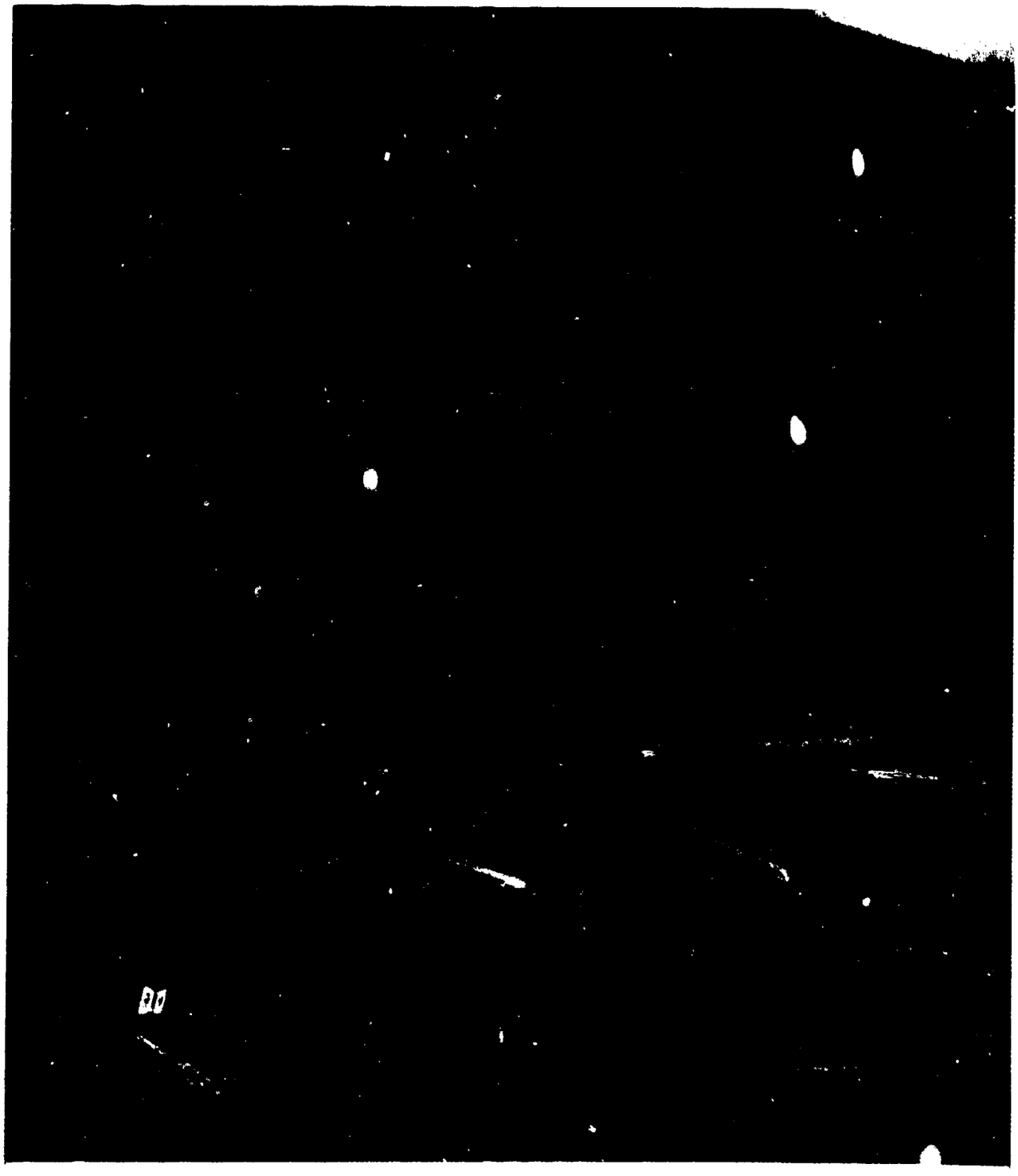
AB-CR-68-2151-2. Starboard quarter.

AB-CR-68-2151-5. Starboard side frame 100 to stern.

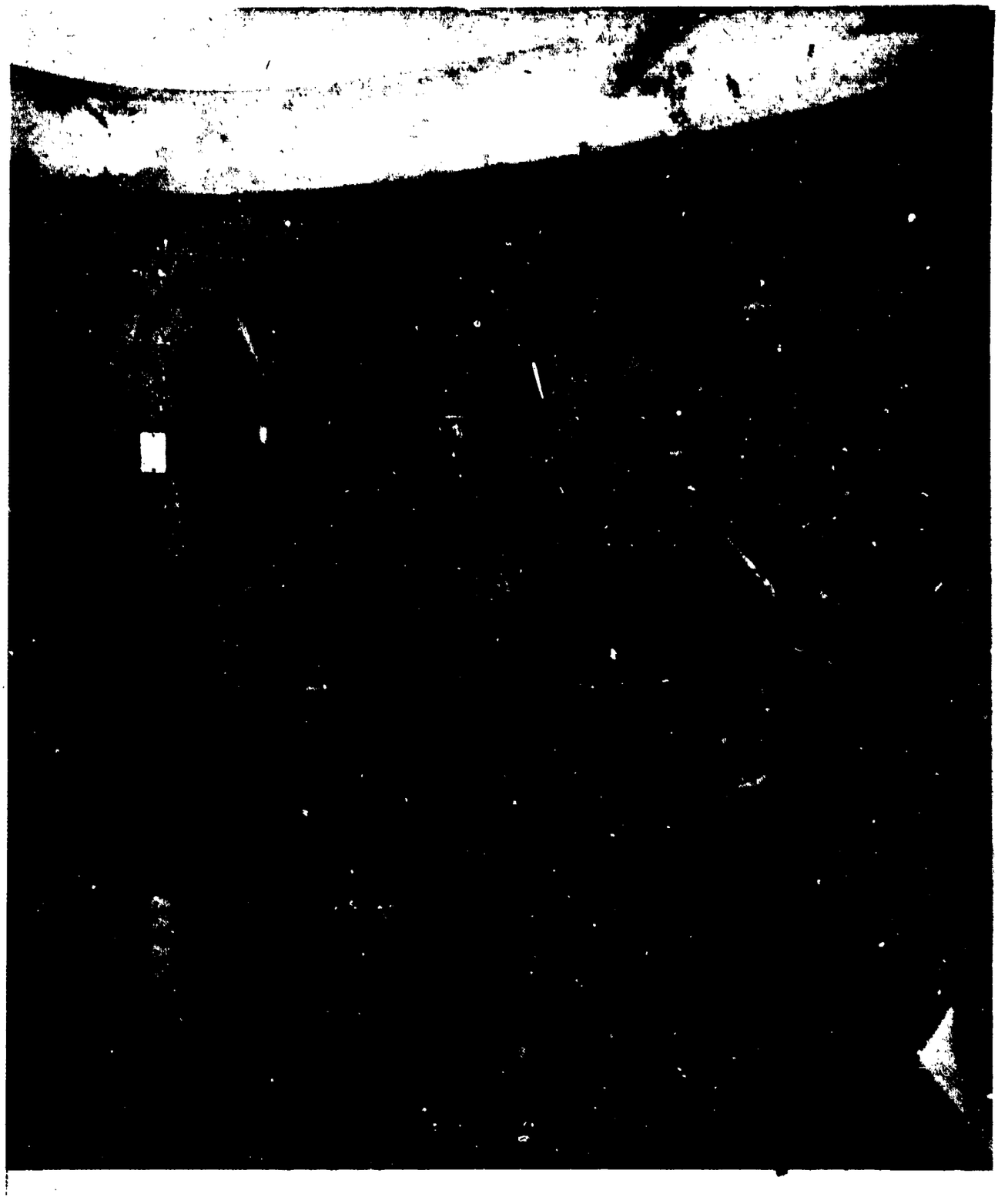
AB-CR-68-2151-4. Starboard side frames 72 to 128.

AB-CR-68-2151-3. Starboard side frame 34 to 122.

AB-CR-68-2151-6. Starboard side frame 44 to 130.

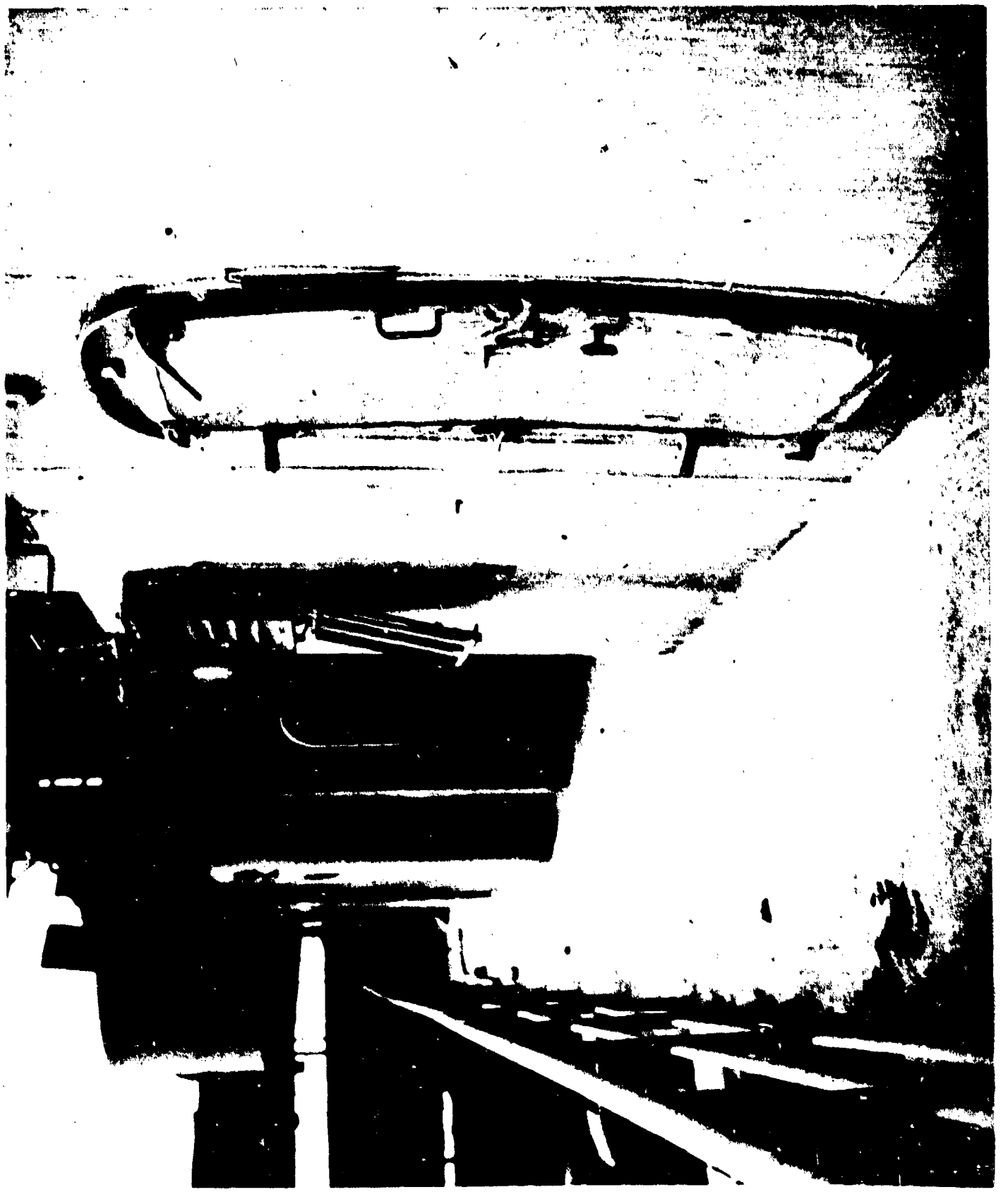


AB-CR-66-152-1. Main deck, port weather passage. Showing dished bulkhead and doors at frames 105 and 109.



AB-CR-66-152-2. Main deck, weather passage, frame 122, port. Showing additional damage to weather doors. Most of this damage is a result of Test A.

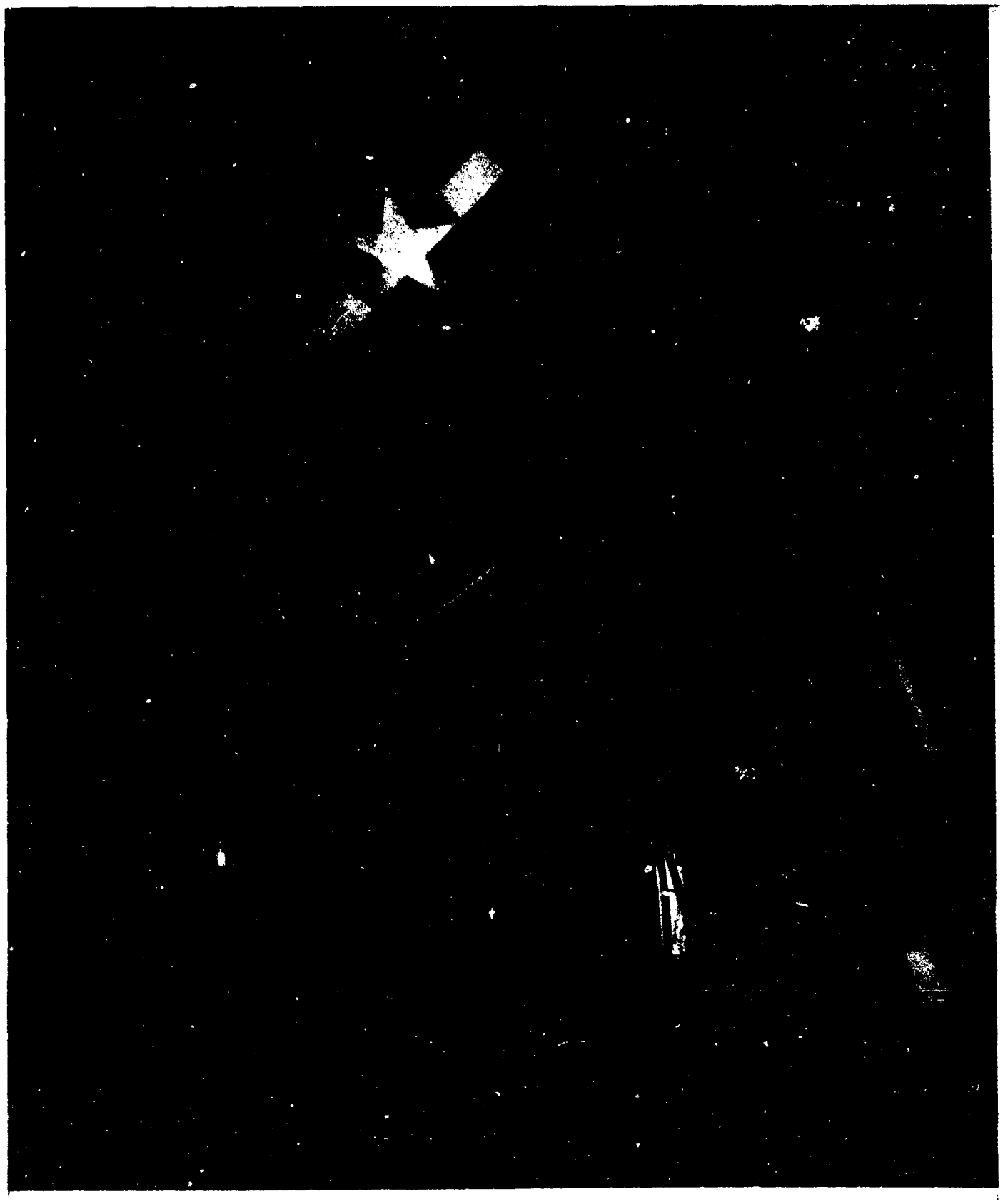
AB-CR-66-152-3. Dished door, upper deck, frame 131, port.



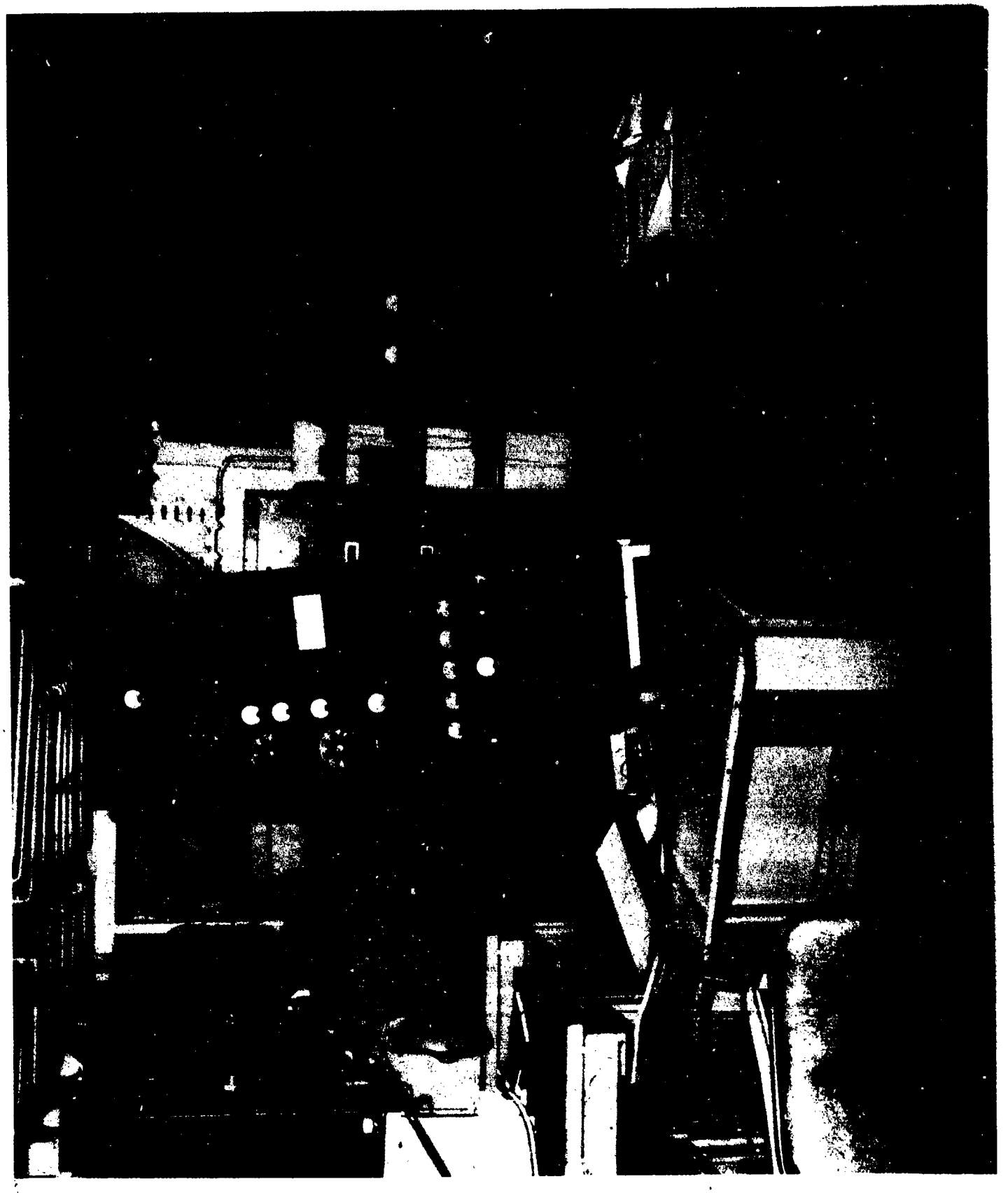
AB-CR-66-152-8. Navigation deck, port Looking forward on walkway, showing deflected door at frame 92.

AB-CR-66-140-10. Displaced berths and hatch covers in forward cargo hold. Main deck.

AB-CR-66-152-4. General view looking down and aft into cargo hold No. 2.



AB-CR-66-152-6. Looking down and forward into cargo hold 1.

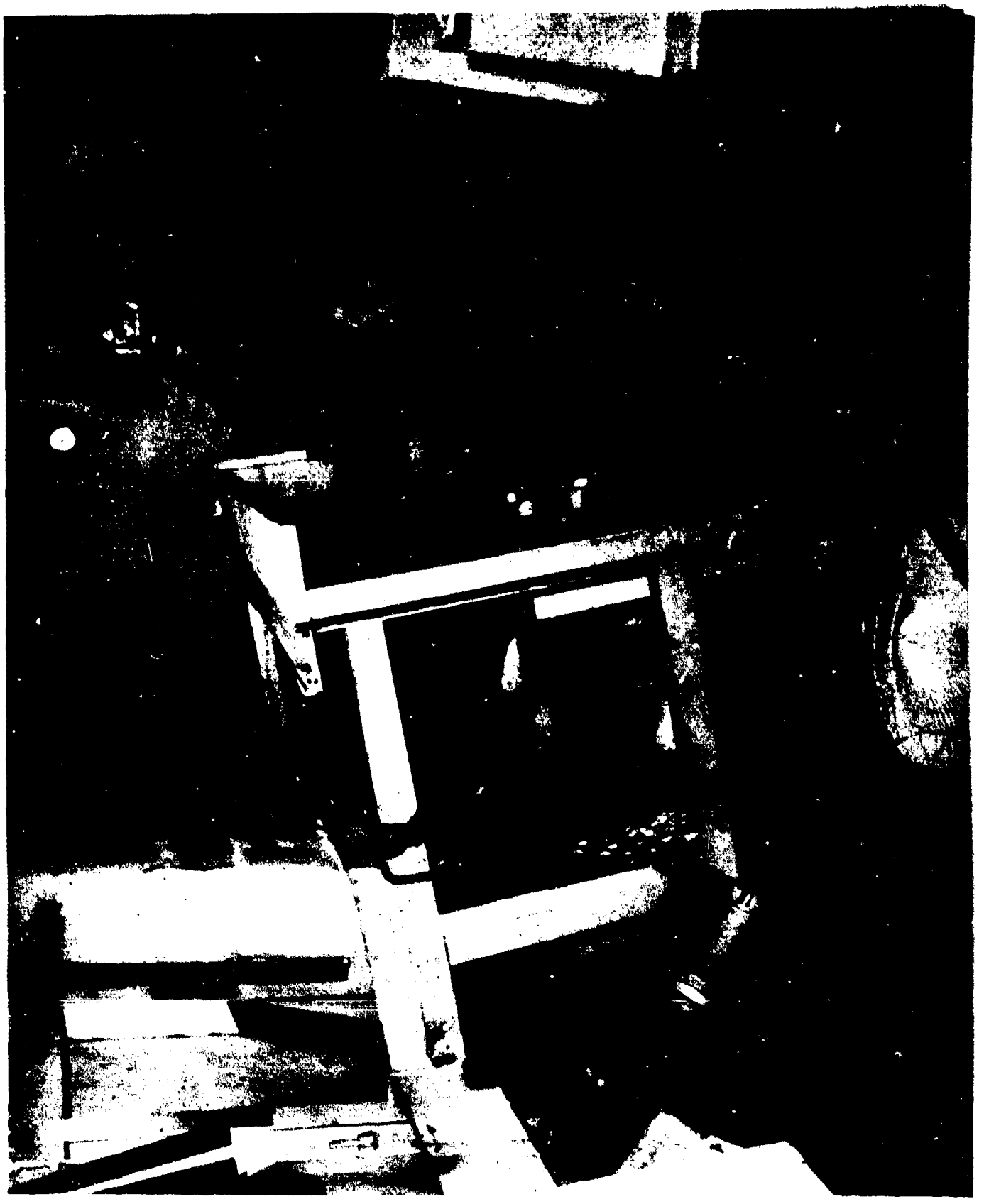


AB-CR-68-152-7. Radio room. Navigation deck, port. Showing displacement of equipment.

AB-CR-66-140-12. Displaced furniture in ship's office. Main deck.

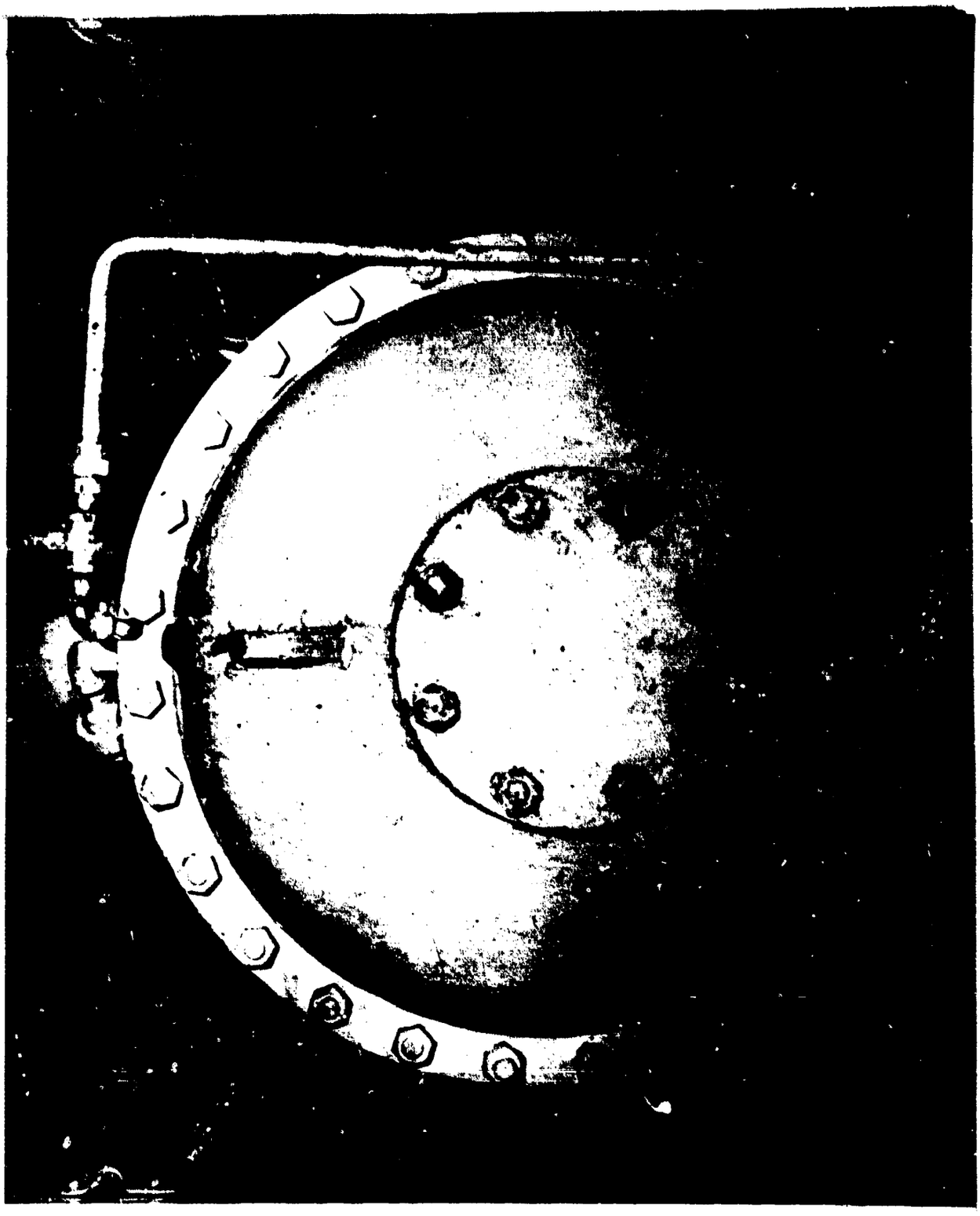
AB-CR-100-2992-7. Broken drain piping and tub supports in laundry.

AB-CR-100-2992-8. Damage to piping and panels of scuttlebut in crew's galley, main deck.

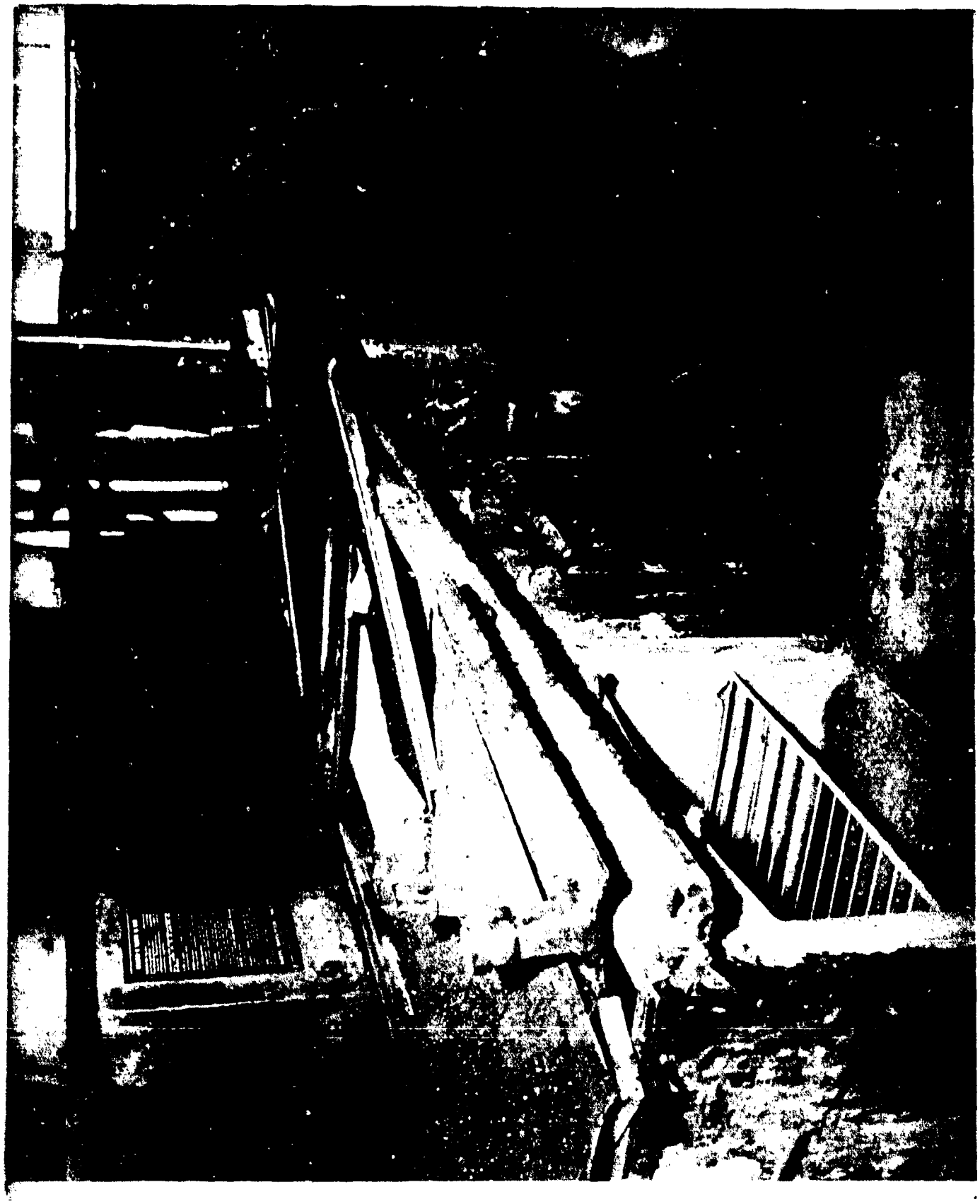


AB-CR-100-2992-4. Displaced equipment in after machinery space.

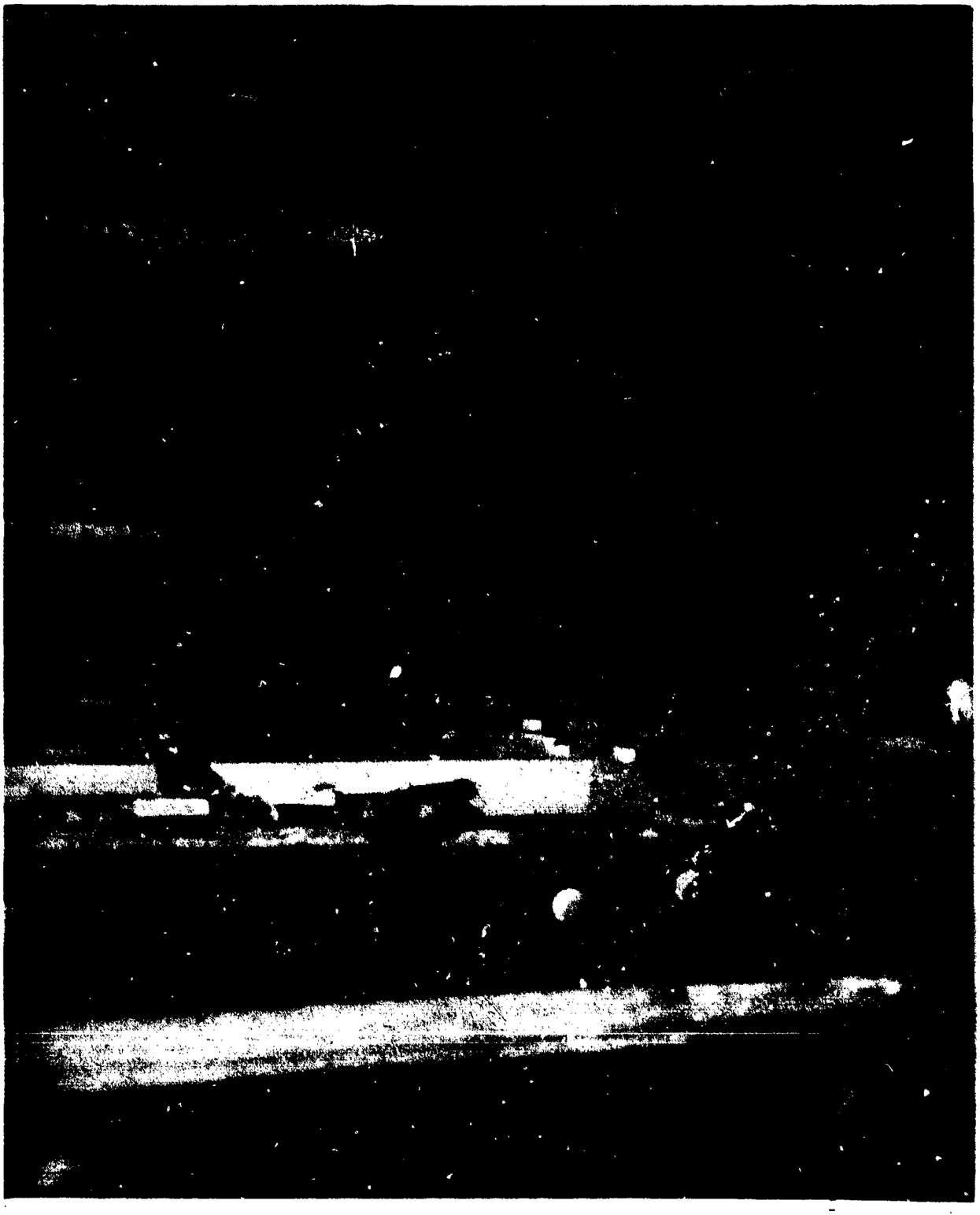
AB-CR-100-2992-3. No. 1 boiler, slag on deck.



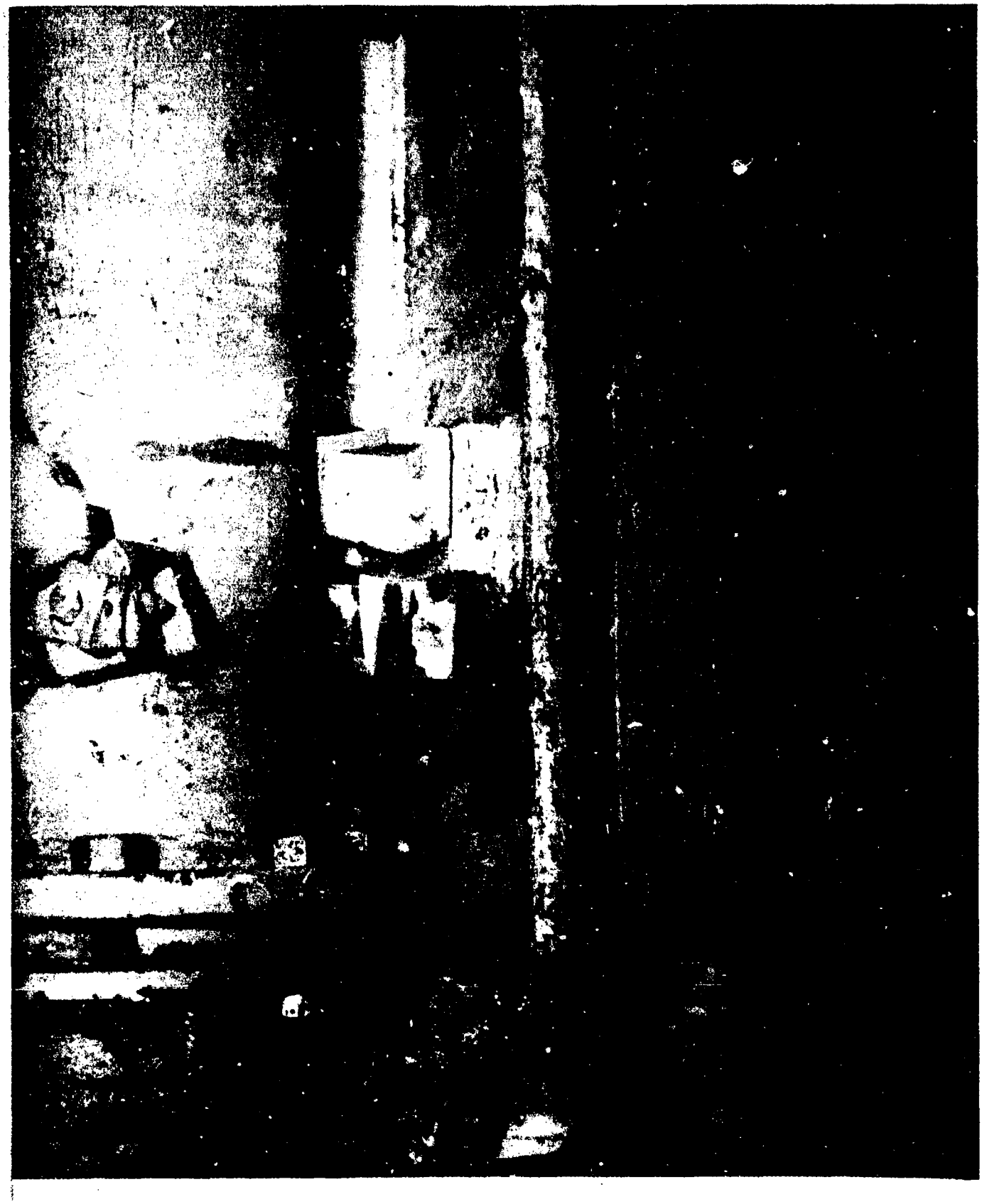
AB-CR-100-2992-2. No. 1 engine room, vent line broken on No. 1 auxiliary condenser.



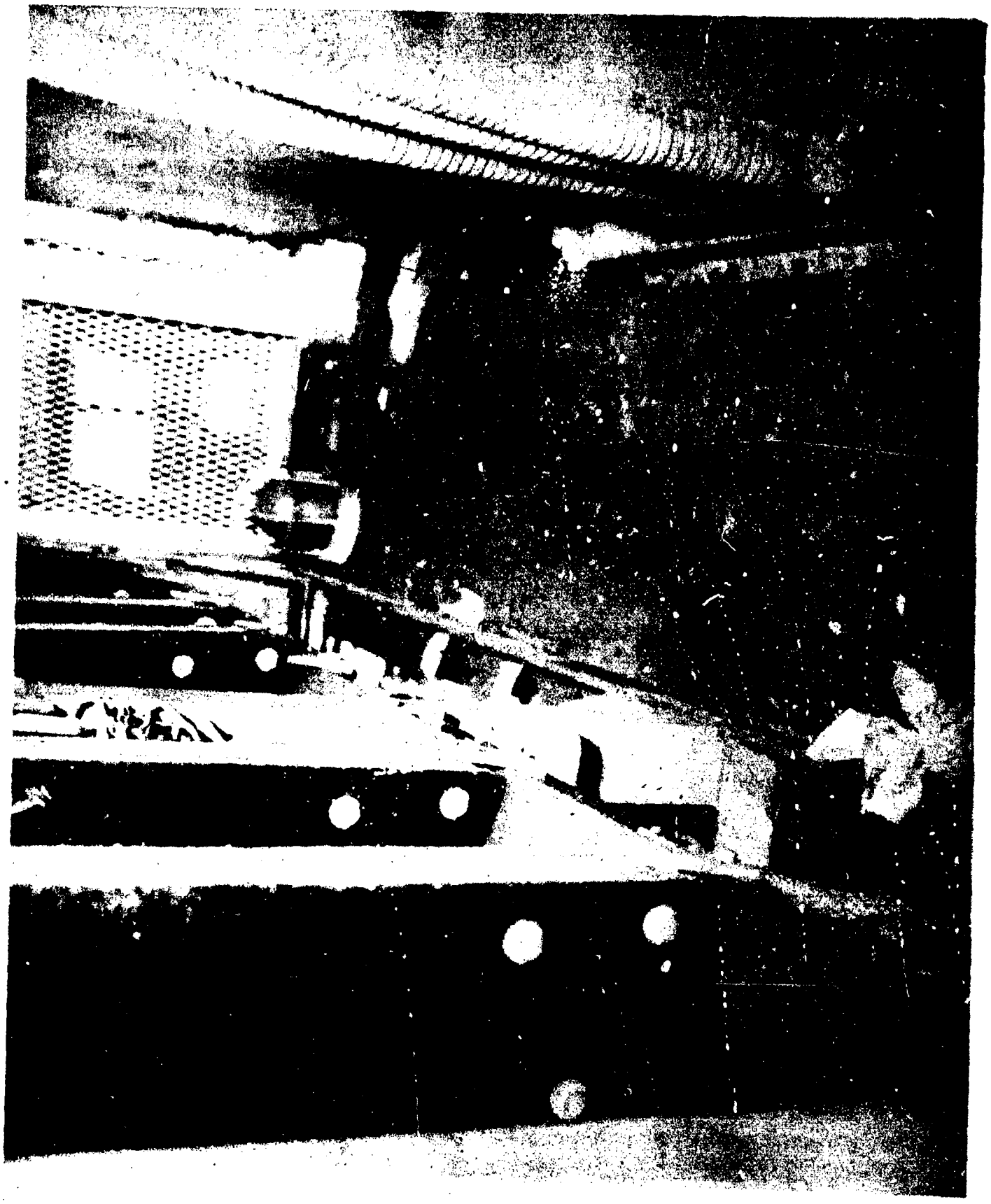
AB-CR-100-2992-5. Galley range.



AB-CR-80-4186-1. Rear view of propulsion control cubicle showing displaced arc chute.



AB-CR-100-2992-1. Auxiliary generator in auxiliary machinery room. Broken cast iron saddle for oil cooler.



AB-CR-80-4185-12. Rear view of a propulsion control cubicle showing the dislodged arc chutes.

AB-CR-80-4185-8. Showing the gyro battery dislodgement in the I. C. room.

APPENDIX

SHIP MEASUREMENT DIAGRAM

TEST BAKER

SHIP MEASUREMENT DATA

Deck deflection scratch gages were installed to record relative movement between the upper and main decks. A tabulation of gage locations and readings is given on page 95.

SECRET

DECK DEFLECTION GAGES

SHIP APA 66 TEST B

LOCATION			MAXIMUM	MAXIMUM	PERMANENT SET		REMARKS
FR. NO.	DECK	DIST. OFF ℄	COMP.	EXP.	DISTANCE	EXP. / COMP.	
128	MAIN	℄	0	1/16"	0	0	
128	MAIN	14'-6" PORT	15/16"	1/2"	1/8"	COMP.	
128	MAIN	14'-10" STB'D.	1"	7/16"	1/16"	EXP.	
140	MAIN	℄	0	0	0	0	
140	MAIN	15'-0" STB'D.	7/8"	1/2"	0	0	
140	MAIN	15'-0" PORT	13/16"	3/16"	0	0	

APPENDIX

COMMANDING OFFICERS REPORT

TEST BAKER

COMMANDING OFFICERS REPORT

REPORT # 11

SECTION 1

Report eleven is submitted herewith. It is necessarily brief and incomplete, as the inspections were made without ships lighting and very hastily due to generally high radioactivity. It is believed however that, any major damage would not have been overlooked.

Explosion took place about 1000 yards on the starboard bow. Damage is as described below:

TOPSIDE DOORS AND BULKHEADS.

Port side of main deck bulkhead was dished in from frames 65 to 120. Four doors in this bulkhead were bent. Three being tightly jammed. This bulkhead curiously enough is the lee bulkhead. The starboard bulkhead was undamaged.

Light partitions and furniture in superstructure received a moderate amount of damage in addition to that already sustained in Test A. No attempt was made to carefully appraise the extent.

TOPSIDE DECKS.

Number one and two hatches were broken up and dropped inside the ship.

MASTS AND BOOMS.

No damage observed.

DAVITS.

No damage observed.

BOATS AND RAFTS.

No boats carried. Rafts which were already badly beaten up on Test A appeared to have suffered further minor damage.

LOOKOUT TUBS AND GUN TUBS.

No damage observed.

AMMUNITION AND GUNS.

Undamaged.

COMPASSES.

Repeaters knocked out of gimbals. Unable to test out under power.

SEARCHLIGHTS.

No damage observed on visual inspection.

ELECTRONICS.

Equipment knocked down by blast. No power available for testing.

PIPING AND TANKS.

3/4" nipple on auxiliary condensor blowdown connection broke off (it was already badly rusted), probably causing the complete flooding of the forward engine room.

No other damaged piping was discovered except a few unimportant bends and drip leaks.

RUDDER.

Apparently undamaged.

DECK RIGGING.

No further damage was specifically noted. There was comparatively little left standing after test A.

COMMUNICATIONS.

Radio equipment knocked about by blast. No other damage observed.

FIRES.

None.

RADIO ACTIVITY.

Extremely high. Deck littered with metallic fragments. Diesel generator compartment was so dangerously radioactive that emergency lighting could not be obtained.

LIFE HAZARDS.

The remaining usefulness and the life expectancy of crew and passengers would be a matter of conjecture.

MACHINERY.

Forward engineroom was completely disabled due to flooding. After engine room and shafting was undamaged.

SUMMARY.

The ship although in the inner array of target vessels received no important damage from the blast except for contamination by radioactivity. The flooding would have been easily stopped by personnel.

RECOMMENDATIONS.

None which have not already been made, and which deal mainly with improved protection of superstructure and decks against the radioactive effects of a bomb explosion.

PART - C

INSPECTION REPORT

SECTION - I HULL

A. General description of hull damage.

There was no important injury to the hull. Visual inspection disclosed ship had a 2° list to port and 1 1/2 feet down by the stern. Forward engine room was flooded to a depth of sixteen feet. Cause of flooding due to a broken 3/4" nipple on salt water side of auxiliary condensor.

The seaworthiness of the vessel was greatly effected by flooding of forward engine room. Ordnance and gunnery installations apparently undamaged by explosion.

Messing facilities were very little damaged. Habitability was impaired in living quarters A-102-L, C-104-L, and officers quarters on 02 deck between frames 59 and 101.

All booms were intact and apparently in operating condition.

It is estimated that if boats were in davits they would have been damaged. Davits apparently in working order.

B. Superstructure.

Bulkhead port side main deck dished in 4" from frame 65 to 120.

C. Turrets Guns and Directors.

Not applicable.

D. TORPEDO TUBES AND APPURTENANCES.

Not applicable.

E. Weather Decks.

No damage observed.

F. Exterior Hull.

Undamaged.

G. Interior Compartments.

Not observed.

H. Armor Decks.

Not applicable.

I. Not observed.

J. Not observed.

K. Not observed.

L. Flooding.

Forward engine room flooded due to broke: nipple in saltwater side of condenser.

M. Ventilation,

Not observed.

N. Ship Control and Fire Control Stations.

Not observed.

O. Not applicable.

P. Ammunition Stowage.

Not applicable.

Q. Ammunition Handling.

Not applicable.

S. Miscellaneous.

Not observed.

PART - C

INSPECTION REPORT

SECTION - II MACHINERY

A. The overall condition of the machinery appeared to be very good from a visual inspection. The forward engine room machinery was damaged due to flooding. The forward engine room had about sixteen feet of water in it due to flooding in twenty days after test B. This level of water was about the same level as the sea level.

No major damage was observed with the exception of the damage in the forward engine room due to flooding.

Flooding and blast was the primary cause of damage.

Operation of machinery unobserved.

B. No damage observed.

C. No damage observed.

D. No damage observed.

E. No damage observed.

F. No damage observed.

G. No damage observed.

H. Unobserved.

I. No damage observed.

J. Unobserved.

K. Unobserved.

L. Unobserved.

M. Unobserved.

N. Unobserved.

O. Unobserved.

P. Unobserved.

Q. Unobserved.

R. Unobserved.

S. Unobserved.

T. No damage observed.

U. No damage observed.

V. No damage observed.

Small salt water lines which were already in a weakened condition from rust were broken off. Flooding is attributed to this cause. Drain lines on the salt water sides of the condensers and condenser piping in the forward engine room was broken.

W. Unobserved.

PART C

INSPECTION REPORT

SECTION -III ELECTRICAL

A. The overall condition of the electrical equipment after the test was fair. There was a lot of damage done to electrical equipment located on the lower levels of the engineering spaces due to flooding.

Areas of major damage were on the lower levels of the flooded engine room.

Primary cause of damage was due to flooding.

Operation was unobserved.

e. Unobserved.

B. No damage observed. #1 main propulsion motor and fan motors for same were flooded.

C. No damage observed.

D. Unobserved.

E. Unobserved.

F. Unobserved.

G. No damage observed.

H. No damage observed.

I. Not applicable.

J. Portable Batteries.

All batteries were badly jarred due to blast. Cell caps were knocked off some of the electrolyte was spilled in batteries on the main deck and above.

K. Unobserved.

L. Unobserved except that lighting fixtures were broken on the main deck and above.

M. Unobserved.

N. No damage observed.

O. Unobserved.

P. Unobserved.

Q. Not applicable.

R. Not observed.

S. Unobserved.

T. Unobserved.

U. No damage observed.

V. No damage observed.

PART - C

INSPECTION REPORT

SECTION IV - ELECTRONICS

A. General description of electronics damage.

a. Overall condition: Equipment generally knocked down and thrown about by blast. No power available to test out instruments.

b. All antennas down.

c. All damage caused by blast.

1. Radar.

(a) See (a) above.

2. Radio.

(a) See (a) above.

3. Sonar.

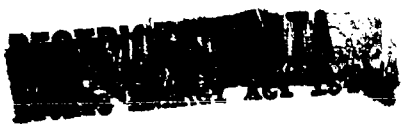
(a) See (a) above.

4. Loran.

(a) See (a) above.

d. Items B through V covered above.

Classification (~~Cancelled~~) (Changed to CONFIDENTIAL)
By Authority of Joint Chiefs of Staff Action of 15 April 1949
By John Berg Capt Date 26 Sept 51



CONFIDENTIAL

Defense Special Weapons Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398

TRC

18 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush (Security)

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency has declassified the following reports:

AD-366588	XRD-203-Section 12
AD-366589	XRD-200-Section 9
AD-366590	XRD-204-Section 13
AD-366591	XRD-183
AD-366586	XRD-201-Section 10
AD-367487	XRD-131-Volume 2
AD-367516	XRD-143
AD-367493	XRD-142
AD-801410L	XRD-138
AD-376831L	XRD-83
AD-366759	XRD-80
AD-376830L	XRD-79
AD-376828L	XRD-76
AD-367464	XRD-106
AD-801404L	XRD-105-Volume 1
AD-367459	XRD-100

TRC 18 April 1997

Subject: Declassification of Reports

AD-367491	XRD-134-Volume 2
AD-367479	XRD-123
AD-367478	XRD-122
AD-367481	XRD-125
AD-367500	XRD-159-Volume 2
AD-367499	XRD-160-Volume 3
AD-367498	XRD-161-Volume 4
AD-367512	XRD-147
AD-367511	XRD-148
AD-367465	XRD-107
AD-366733	XRD-43
AD-367477	XRD-121
AD-367476	XRD-120
AD-367467	XRD-109-Volume 1
AD-367475	XRD-119
AD-367474	XRD-118
AD-367473	XRD-117
AD-367472	XRD-116
AD-367471	XRD-115
AD-367466	XRD-108
AD-801405L	XRD-113
AD-367470	XRD-112
AD-367469	XRD-111

TRC 18 April 1997

Subject: Declassification of Reports

AD-801406L ✓ XRD-114.

In addition, all of the cited reports are now **approved for public release; distribution statement "A" now applies.**

Ardith Jarrett

ARDITH JARRETT
Chief, Technical Resource Center